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VOL. 21, NO. 2 2009

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Regular features

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To serve as an advocate and resource for the practice of Orthopaedic Physical Therapy by fostering quality patient/client care and promoting professional growth.

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Orthopaedic Section *Celebrates 30 Years!*

Guest Editorial

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Professionalism in Physical Therapy

It is my privilege to write this editorial for this month's issue of *Orthopaedic Physical Therapy Practice.* It has been 30 years since I graduated Physical Therapy school; however, the memories of the early days of my training remain quite vivid and distinct. One of the most prophetic statements I heard early in my training was that from one of my mentors and the Chairman of the Physical Therapy Program of the State University of New York at Buffalo from which I graduated, Dr. Steve Rose. When our class of physical therapy students was chosen, Dr. Rose came to us and introduced him by saying, "Welcome to our profession." He demonstrated such pride in the physical therapy profession and wanted all of us to know how truly privileged he was to welcome us as colleagues. Upon hearing those words, I felt honored to be entering into a field that valued itself as an independent profession and throughout my career have worked hard to uphold the values and expectations that being a professional requires.

Professionalism as defined in the Merriam Webster dictionary is "the conduct, aims, or qualities that characterize or mark a profession or professional person." The term profession is defined as "a calling requiring specialized knowledge and often long and intensive academic preparation." There is no question that the profession of physical therapy involves a long period of study to master the academic rigor required of our training. We have also prided ourselves on the fact that physical therapy is a dynamic and fluid profession that never stops growing. Incumbent upon us as professionals is to recognize the importance of continued education and lifelong learning so that the knowledge we acquire can be applied to the patients we service.

The American Physical Therapy Association has identified core values that define professionalism. These are: (1) Accountability, (2) Altruism, (3) Compassion and Caring, (4) Excellence, (5) Integrity, (6) Professional Duty, (7) Social Responsibility.

The APTA has defined professionalism as "the ability of Physical Therapists and Physical Therapist Assistants to apply the above core values as we work together to achieve optimal patient care. I have often told my colleagues, family, and friends that I rarely have a bad day at work. There is not one day that goes by where I do not enjoy patient interaction and collaborating with my "work family." I have also had the privilege of meeting many physical therapists who work in different states around the country and almost universally, they express the same love for their work and profession. I believe that the reason why we as a profession feel so fondly for the work that we do, is because we have remained true to the core values of professionalism that guide us. The longer one has the privilege to be in this profession, the more self-evaluation we undertake. We need to ask ourselves if we are doing our best to honor our profession by behaving professionally.

Accountability

The APTA defines accountability as "active acceptance of the responsibility for the diverse roles, obligations, and actions of the Physical Therapist including self-regulation and other behaviors that positively influence patient outcomes, the profession, and the health needs of society." Examples of these attributes are being responsive to a patient's needs and goals, assuming responsibility for learning and change, acknowledging and accepting consequences of our actions, and adhering to the code of ethics and standards of practice that govern the conduct of professional activities.

Other indicators of accountability include communicating accurately to others about professional actions, seeking continuous improvement in quality of care, educating students in a manner that facilitates the pursuit of learning, and maintaining membership in the American Physical Therapy Association and other professional organizations that govern our work.

I ask that each of you think about whether you are behaving in an accountable fashion. Do you strive everyday to seek improvement in the quality of care of your patients? Do you refer a patient to the appropriate practitioner if necessary? Do you strive to learn something new everyday so that you are always current? Do you mentor students so that they obtain the love and professional responsibility of Physical Therapy? Do you understand the importance of never being complacent? Are you doing your best to remain accountable to yourself and your profession?

Altruism

The APTA defines altruism as "the primary regard for devotion to the interest of patients thus assuming the fiduciary responsibility for placing the needs of the patient ahead of the Physical Therapist's self-interest." Sample indicators include placing the client's needs above the Physical Therapists. These also include providing pro bono services, offering PT services to the underserved and underrepresented, providing patient care that goes beyond the expected standard of practice, and always putting the patient's needs above your own.

Ask yourself this question, If a patient came to your office in need of your service and had limited insurance, would you send that person away telling him or her that you are unable to see them because they were unable to pay, or would you try to "work something out" so that you would be able to provide services to that patient in need? If a patient with whom you are working loses his or her job and no longer has insurance to cover your services, would you abandon that patient or continue to see that patient free of charge until they were able to reach their maximal level of independence? Are you demonstrating altruism as defined by your profession?

Compassion and Caring

This component of professionalism is defined as "that which understands cultural

and psychological influences on the patient's life in their environment, understanding of their perspective, and being an advocate for their needs." Compassion and caring involve focusing on achieving the highest potential for patient outcome and empowering patients to achieve the maximal level of function as to exercise self-determination in their care.

Do you demonstrate compassion and caring in your work? Do you greet each patient at the door by acknowledging them by name and making them feel as if you are happy and privileged to have them in your facility? If a patient does not show up for physical therapy and you hear that the person had a personal family tragedy or was ill, do you call them at home to find out how they are doing? Do you "go the extra mile" to make it clear to your patients that you truly care about their well being and are privileged to provide service to them?

Excellence

The APTA defines excellence as Association "physical therapy practice that consistently uses current knowledge and theory while understanding personal limits, integrates judgment in the patient/client perspective, embraces advancements, challenges mediocrity, and works toward the development of new knowledge." Components of excellence include demonstrating investment in the profession of physical therapy, conveying intellectual humility in professional and interpersonal situations, demonstrating high levels of knowledge and skill in all aspects of the profession, engaging in acquisition of new knowledge throughout one's professional career, and sharing that knowledge with others.

Ask yourself when was the last time you attended a continuing education course? Do you subscribe to professional journals and read them? Are you attempting to justify everything you do with published science? Do you challenge yourself with your colleagues by asking if there is anything else I could do or is this treatment effective? Are you doing your best to know as much as you possibly can while recognizing that there are always limits to one's knowledge? One of my early mentors told me that there are 3 levels of knowledge: conscious competence, conscious incompetence, and unconscious incompetence. These defined are knowing what you know, knowing what you don't know, and not knowing what you don't know. Excellence in physical therapy involves conscious competence and conscious incompetence. Knowing what you know and can do well, and most importantly knowing what you don't know and recognizing where to find the answer.

Integrity

Integrity is defined as "the steadfast adherence to high ethical principles or professional standards; truthfulness, fairness, doing what you say you will do, and speaking forth about why you do what you do." Integrity involves abiding by the rules and regulations and laws applicable to the profession, adhering to the highest standards of professional practice, being trustworthy, taking responsibility to be an integral part of the health care team, knowing one's limitations and acting accordingly, and choosing employment situations that are congruent with practice values and professional ethical standards. The hallmark of integrity is the ability to act on the basis of professional values even when the results of the behavior may place one's self at risk.

Are you practicing in a manner that follows the professional standards established by our governing body, the American Physical Therapy Association? Do you maintain patient confidentiality? Do you refer patients to the appropriate practitioner based on their needs even though you may be losing money in doing so? Are you working in a physical therapy environment that serves the best interest of the patient, and does not result in profiteering by your referral sources? Do you maintain integrity when treating you patients?

Professional Duty

Professional duty is the commitment to meet one's obligations to provide effective physical therapy services to individual patients and serve the profession as you positively influence the health of society.

Do you promote physical therapy outside of your work environment? Do you promote your profession to your patients, referral sources, and general public? Do you offer educational programs free of charge to the public at large? Are you behaving professionally at all times?

Social Responsibility

Social responsibility is the promotion of mutual trust between the profession and the larger public that necessitates responding to societal needs for health and wellness.

Are you involved with any grassroots organizations that promote health care legislation benefiting the profession and our patients? Do you keep abreast of the political climate so that you can apprise patients of any pending changes in health care legislation that may affect your work? Are you advocating for changes in laws that affect the provision of physical therapy services? Are you a law abiding citizen?

It is incumbent upon all of us to be as well educated as we possibly can. The APTA makes information available to its members on any pending changes in health care legislation that could affect our work and provision of services. It is vital that we are aware of these changes and act on them so that our patients can continue to benefit from the services that we provide.

I believe that it is important that professional people know what is required of them by their profession so that they can behave and function professionally. These components that the American Physical Therapy Association espouses allows each one of us to think about who we are, why we went into the profession, and how we may be able to continue to offer our services as responsible Physical Therapists. I have and continue to learn much from being a Physical Therapist. When confronted by these professional parameters, I strive to function professionally. I hope that if you have the occasion to think about these core values, you will do the same.

President's Corner

James J. Irrgang, PT, PhD, ATC

Moving Forward

Many members of the Orthopaedic Section have expressed concern about the lack of understanding that the public and other health care professionals have about what we do as orthopaedic physical therapists. This concern has been fueled by campaigns that promote the role of physical therapists in treating "Blackberry thumb" and proper use of backpacks to prevent back and neck pain. While physical therapists may have a role in managing these conditions, it certainly is not the "bread and butter" for physical therapists that specialize in examination and treatment of musculoskeletal conditions. This has lead to a cry for the need to create a brand for physical therapy that accurately reflects what physical therapists do that is widely recognizable to the public and other health care practitioners.

To address this concern, the American Physical Therapy Association created a Branding Task Force to create a "brand platform." A "brand platform" positions a product or service, in this case physical therapy and physical therapists, and provides direction for communication of that position to targeted audiences. To facilitate the activities of the Branding Task Force, the APTA contracted with CRT/tanaka to develop a brand platform for physical therapy and physical therapists that could be used to educate consumers and professional audiences, create an emotional connection with consumers, raise the stature of the profession, and to enhance relationships with external constituencies. The results of the branding campaign were recently released to the membership at the 2009 Combined Sections Meeting in Las Vegas Nevada.

To develop the brand platform CRT/tanaka conducted extensive interviews with consumers that have used the services of a physical therapist in the past as well as with consumers that have not utilized physical therapy. Additionally, interviews were conducted with physicians, nurse practitioners, and insurers. In summary, the interviews indicated that all consumers had a positive impression of physical therapy and physical therapists. Physical therapists were perceived to be the provider of choice for loss or limitation of movement, injury and treatment of pain, even above orthopaedic surgeons and chiropractors. Physicians and nurse practitioners expressed satisfaction with the services provided by physical therapists. Consumers understood that physical therapists provided rehabilitation to improve movement and motion and to help injured people recover. Consumers are looking for prevention and wellness options and would be more likely to use the services of a physical therapist if they knew that doing so would significantly improve mobility to perform activities of daily life, provide an alternative to surgery and would relieve or manage pain without medication. Does this sound familiar???

The results of the survey also revealed opportunities for improvement of the image of physical therapy and physical therapists. Consumers do not view physical therapists as doctors, but believed the DPT designation was valuable. Physicians did not believe that the DPT would improve the clinical abilities of the physical therapist and were concerned that the DPT would drive the costs of physical therapy even higher. Insurers cited abuse and over-utilization as their biggest concern and reason for high costs. Consumers as well as physicians and nurse practitioners say that there are inconsistencies among physical therapists and physical therapy facilities. Physicians did not support direct access for physical therapist because they did not trust the ability of the physical therapist to make an accurate diagnosis.

Based on the information from the interviews, 6 guiding principles were adopted to develop a plan for branding physical therapy and physical therapists. The guiding principles will create a brand platform that:

1. Educates consumers and professional audiences to stimulate behavior change over time.
2. Creates an emotional connection with consumers.
3. Raises the stature of the profession.
4. Speaks directly to the Boomer and Gen X's passion to stay active for a long time.
5. Envisions a future of open access but realizes the primary care physician is still an important conduit.
6. Motivates the profession to be a part of shaping their future and inspires behavioral change.

Physical therapists help people act smarter and feel more confident. In doing so they serve as a coach and teacher, deliver knowledge, offer independence, focus on understanding, and serve as experts and advisors. Physical therapists also help people perform at their upper limits. As such they are known as a rescuer, deliver courage, offer mastery, and motivate patients and clients to reach their maximum. Thus, physical therapists function as the sage-hero by merging the independence gained from the teacher/coach with the strength and mastery offered by the hero.

The brand platform for physical therapy is MOVE FORWARD: Physical Therapy Brings Motion to Life. It is appropriate that the brand focuses on movement because the implementing the brand is a "movement" that will shift the perceptions of consumers from "physical therapists as rehabilitators" to physical therapists as the experts in restoring and improving motion in peoples lives. Physical therapists are health care providers who help to restore and improve movement to achieve quality of life without surgery or prescription medication.

To facilitate implementation of the brand, the American Physical Therapy Association has established BrandBeat, which is a website (www.apta.org/brandbeat) that is a resource for information and guidelines on how to promote, become, and live the new brand for physical therapists. A consumer website (www.moveforwardpt.com) was also launched to promote the brand to consumers. To facilitate implementation of the brand for orthopaedic physical therapists, the Orthopaedic Section has established a Public Relations and Marketing Committee that will be chaired by Eric Robertson.

It is vitally important, especially as the economy worsens and competition toughens, that we come together in an organized manner to

let consumers, other health care professionals, and legislators know who we are as a profession, what our core values are, and how we work. We must make a lasting impression and own our space in the thoughts and perceptions of our key audiences.

A brand is only as strong as the people who live it. We must all work together to make this brand a success. What can you do to promote and live the brand? Start by becoming familiar with the BrandBeat and consumer Web sites. Also, emphasize the key message, that physical therapists are health care providers who help to restore and improve movement to achieve quality of life without surgery or prescription medication, in your communications with patients, insurers, health care professionals, and all others that you come in contact with. Additionally you should ensure your compliance with defensible documentation and review the APTA modules on professionalism.

By embracing and living the brand, we can promote physical therapy and physical therapists as the profession and health care providers that help individuals to restore and improve motion to enhance quality of life.

To find more information about living and breathing the brand go to BrandBeat at www.apta.org/brandbeat and the consumer website at www.moveforwardpt.com.

Move Forward.™
Physical Therapy Brings Motion to Life

Postoperative Physical Therapy Management of a Reverse Total Shoulder Arthroplasty (rTSA)

Steve Volpe, DPT, MBA, OCS, CHT, CSCS[1]
Dr. Jason A. Craig, MCSP, DPhil

ABSTRACT

Study Design: Case report.

Background/purpose: The reverse shoulder total arthroplasty (rTSA) has been gaining frequency in usage in the United States since its FDA approval in 2004. The rTSA is typically used as a salvage procedure for patients 70 years or older who have disabling shoulder pathologies and associated rotator cuff deficiency. The purpose of this case report is to describe the physical therapy management of a patient who underwent this procedure.

Case Description: A 76-year-old-female with the medical diagnosis of severe left shoulder osteoarthritis and rotator cuff deficiency underwent rTSA. A postoperative protocol was developed by the author that guided the physical therapy postoperative management. The patient started physical therapy 3 weeks postop. She attended physical therapy for a total of 30 visits, 3 times a week for 10 weeks.

Outcome: At the time of discharge the patient had experienced improvements in pain scores, impairments, and functional limitations. At discharge the patient recorded pain as 2/10, from initial pain of 6/10. The patient's active shoulder flexion and abduction had increased from 70º to 145º and 140º, respectively. The patient was able to reach above her head, and control weights up to 5 pounds overhead using her left upper extremity.

Discussion: This case demonstrated good outcomes following the physical therapy protocol developed to manage the patient post rTSA. This case report provides a detailed protocol which may potentially guide future postoperative physical therapy care for patients who undergo this procedure. Future research using a larger rTSA sampling could establish the validity and effectiveness of this protocol.

Key Words: physical therapy, reverse total shoulder arthroplasty

BACKGROUND

The reverse total shoulder arthroplasty (rTSA) is a relatively new total joint arthroplasty procedure that has recently been gaining acceptance in the United States of America. The rTSA, as designed by Paul Grammont,[1] has been in clinical use in Europe since 1985. This technique was approved by the FDA in March 2004 for use in the USA.[1] In the normal shoulder joint, the articulation follows that of a ball and socket alignment with the humeral head representing the convex ball and the glenoid fossa representing the concave socket. Traditional total shoulder arthroplasty attempted to replace the glenohumeral (GH) joint following the same bony configuration of a normal shoulder. The conventional shoulder hemiarthroplasty replaces only the humeral head of the GH joint with a convex humeral component. The rTSA essentially inverts this typical convex-concave relationship of the normal GH joint by replacing the glenoid fossa with a glenospherical ball component and the humeral head with a concave cup. The rTSA has 5 components: a glenoid base, a glenosphere, a polyethylene cup, a humeral neck, and a humeral stem.[2] The components of the rTSA are presented in Figure 1.

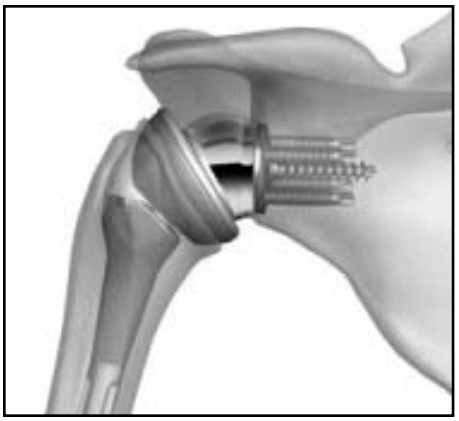

Figure 1. Surgical component parts of the typical reverse total shoulder arthroplasty. Image used with permission from Richard J Friedman, MD, Charleston Orthopaedic Associates, Charleston, SC.

The traditional total shoulder arthroplasty is the established treatment for advanced GH joint arthritis due to osteoarthritis, rheumatoid arthritis, and/or traumatic arthritis. The hemiarthroplasty has been the established treatment for rotator cuff deficient shoulders and/or irreparable proximal humeral fractures.[3] When the rotator cuff is deficient in traditional total shoulder arthroplasty and hemiarthroplasty, the outcomes for pain and functional ROM return are reported as mixed. The reason for the nonfunctional ROM gains with rotator cuff deficient traditional shoulder arthroplasties has been attributed to the loss of normal scapulo-humeral rhythm biomechanics.[2] A healthy rotator cuff complex is believed to act in synergy to create a caudal glide of the humeral head during shoulder elevation, thus minimizing impingement. With the unopposed superior migration of the humeral head in a rotator cuff deficient shoulder, the deltoid muscle is unable to produce the proper arthrokinematics during shoulder elevation. The resultant effect is the classic shoulder shrugging due to scapular elevation and upward rotation with no significant elevation of the upper extremity away from the torso.

The rTSA addresses this biomechanical breakdown in 2 major ways, thus optimizing deltoid function. The first is by reversing the GH joint convex-concave relationship with a large glenoid hemisphere that has no neck and a small humeral cup (Figure 1).[4] By changing the convex-concave configuration of the GH joint the caudal glide of the humerus during shoulder elevation is no longer required. The second involves the altering of the shoulder joint's rotational axis. The rTSA moves the shoulder center more medially and distally thus enabling enhanced recruitment of the anterior and posterior deltoid muscle fibers to act as abductors.[4]

Standard with any surgical procedure there are indications, contraindications, and potential postoperative complications. The rTSA is currently viewed as a

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salvage procedure for very disabling shoulder pathologies. The primary indications for rTSA include severe and disabling GH joint arthritis associated with an irreparable rotator cuff, pseudo paralysis due to irreparable massive rotator cuff tear, complex fractures with irreparable rotator cuff damage, or revision of a failed traditional TSA with deficient or absent rotator cuff.[5,6] It has also been recommended that patients fitting the profile above should be over 70 years old with low functional demands.[6] The contraindications for the rTSA include advanced glenoid destruction, severe lesions of the deltoid musculature (> 50%), and/or axillary nerve palsy.[7,8] Upon review of the literature, a number of postoperative complications exist that the clinician needs to be made aware. The most common radiographic complication identified in the literature was scapular notching with inferior scapular notching being most common as compared to either posterior or anterior notching.[9] Notching refers to the iatrogenic wearing away of the scapular neck due to humeral cup impingement. The impingement is mainly due to less than optimal positioning of the glenoid component. Other complications that have been documented postoperatively included dislocation, infection, aseptic humeral loosening, peri-prosthetic fracture, late acromial fracture, and axillary nerve palsy.[10,11] Outcomes for patients who underwent the rTSA procedure tended to be better for etiologies of primary rotator cuff tear, primary osteoarthritis with rotator cuff tear, and massive rotator cuff tear versus etiologies of posttraumatic arthritis and revisional arthroplasty.[12]

Research is scarce regarding the postoperative physical therapy management following this relatively new surgical procedure. A search of the peer reviewed literature that occurred at the time of writing this particular case report found few resources describing physical therapy management for patients who underwent rTSA. Most of the studies done were found in surgical journals. Thus the articles focused more on procedure description, procedure indication, and patient ROM outcomes. No comprehensive postoperative physical therapy management guidelines were found. Of special note, a clinical commentary was published in the December 2007 *Journal of Orthopaedic and Sports Physical Therapy* entitled 'Rehabilitation Following Reverse Total Shoulder Arthroplasty' after data was collected for the current patient case description. The purpose of this case report is to describe the overall physical therapy management of a patient who underwent a rTSA procedure. The postoperative intervention received by the patient was developed by the author in collaboration with the orthopaedic surgeon who performed the surgery. In developing the protocol, application of the principles governing soft tissue healing principles and evidence-based clinical decision making to eliminate risk for shoulder dislocation following arthroplasty were strongly considered.

CASE DESCRIPTION

The patient was asked if her case could be used as a research project due to its relative uniqueness and newness. The patient agreed and a research consent form was signed by the patient.

History

The patient was a 76-year-old Caucasian female who presented with the medical diagnosis of left shoulder OA/DJD, 3 weeks status postreverse total shoulder arthroplasty (rTSA). The patient was seen by the physical therapist for initial evaluation 3 weeks postoperatively based upon the orthopaedic surgeon's request. During the initial 3 weeks postop the patient was instructed to remain in the sling and swathe for 24 hours except for hygiene and performance of pendulum swing exercises 3 to 4 times per day. The patient was instructed by the physician that she could begin to decrease sling usage after 3 weeks depending on her tolerance.

The surgical report was obtained by the evaluating physical therapist for review. The surgical report indicated that the preoperative diagnoses were large cyst of the left shoulder and accompanying marked chronic rotator cuff deficiency. The surgical procedures performed were listed as: excision of cyst and rTSA using a Zimmer anatomic shoulder inverse/reverse humeral cup; 0^0 retro with 36 mm glenoid head; an uncemented anatomic shoulder inverse/reverse glenoid component with 2 glenoid screws and a size 7 humeral cemented stem with the PE (polyethylene) insert of 36 mm. Further review of the procedure description revealed that the long head of the biceps was resected due to attenuation and the subscapularis muscle was taken down off of the lesser tuberosity and later reattached. The latter finding had a definite effect on the protocol development as subscapularis protection during the postop management would need to be taken into consideration.

Review of relevant past medical history revealed no previous left shoulder surgeries. The patient reported that after the surgery she had to remain in the hospital for 4 days due to heart and blood pressure related issues. The patient indicated on medical history intake and systems review that she had a history of tachycardia and high blood pressure. At the time of the evaluation, she indicated that both were under control via medications. Heart rate was measured as 64 bpm and blood pressure as 125/80 prior to commencement of treatment. Social history review revealed that the patient was a retired homemaker whose husband had been providing home ADL support as needed. The patient was a nonsmoker and nondrinker. The patient was right hand dominant. No other medical issues were identified.

The Wong–Baker faces pain scale was used to assess pain level. This scale represents the standardized pain scale used by the author's place of employment. The patient reported current pain of 6/10 that was described as being dull and achy in nature. The pain was located diffusely throughout the subdeltoid area. The patient denied any left upper extremity paresthesia. The patient reported her goal for physical therapy was to regain maximum mobility and usage of her left shoulder. No particular hobbies were identified by the patient that she desired to return to.

Initial Examination

Observation

The patient presented to the clinic wearing a sling/swathe. The sling/swathe was removed, the patient donned a gown, and the involved shoulder girdle was observed. At the time of the initial evaluation, the sutures had already been removed and the surgical incision was closed with signs of continued healing with no complication. The majority of the ecchymosis had also resolved. Skin temperature was normal to touch.

Range of motion

At 3 weeks following surgery, active and passive motion guidelines were established. Since the subscapularis muscle was taken down and reattached, as seen with conventional total shoulder replacements, and due to a lack of published protocol information available for the rTSA, Brotzman's *Clinical Orthopedic Rehabilitation* 2nd edition[13] was consulted to review their protocol for a typical TSA. According to this TSA protocol, the following protocol parameters were adopted: no active internal rotation from 0 to 6 weeks postop, active internal rotation commencing between 6 to 12 weeks, and progressing to resistive internal rotation from 12 weeks postop onwards.[13]

The next task was to determine the parameters that would indicate progression from passive ROM activities to AROM for other movement planes. This was a difficult task as little to no clearly stated postoperative protocols were located in the literature search. In pioneering work by Baulot, Charbernaud, and Grammont from 1995, unrestricted AROM was commenced as early as 2 weeks postoperative.[14] Since no soft tissue insult occurred to the deltoid/periscapular musculature and the long head of the bicep was resected following the unrestricted AROM guideline was applied. Therefore, abiding by the subscapularis precautions listed above and the fact that this patient was 3 weeks postop, AROM was assessed for shoulder flexion, abduction, and external rotation.

The final ROM task was to determine boundaries and progression. This also proved difficult due to the paucity of established protocols and the fact that those that were located did not provide detailed ROM boundaries. As has been standard rehabilitation considerations with conventional TSA, shoulder flexion, abduction, external rotation, and extension were restricted. Based upon understanding of soft tissue healing principles and understanding of dislocation risks for a rTSA, the following ROM guidelines were established for the rotective phase of 0 to 6 weeks and are summarized in Table 1: 0-140^0 shoulder flexion, 0-90^0 shoulder abduction in neutral rotation, 0-40^0 external rotation, no shoulder extension past midline, and no combination shoulder extension/adduction/internal rotation ie, reaching behind the back. All progression would be gradual and done with proper neuromuscular control ie, without aberrant and compensatory movement patterns.

The ROM measurements were measured based upon the 0 position plane of reference being anatomical position. At the time of initial evaluation, the patient's ROM measurements were as follows: active shoulder flexion 70º, passive shoulder flexion 130º, active shoulder abduction 70º, passive shoulder abduction 90º, unable to perform active shoulder external rotation against gravity, passive shoulder external rotation 40º, active shoulder internal rotation deferred, and passive shoulder internal rotation 50º (summarized in Table 4). Shoulder IR and ER measurements were taken with the shoulder passively placed and held at 90^0 abduction with the elbow bent to 90^0.

Muscle performance

The Manual Muscle Test grading scale used included the 0 to 5 numeric scale with the inclusion of plus and minus modifiers as operationally defined in *Muscle Testing and Function* 4th edition by Kendall.[15] Isolated manual muscle testing against resistance was deferred at this juncture as the patient was only 3 weeks postop. Grading active ROM attempts revealed the patient's ability to actively lift the arm against gravity as follows: shoulder flexion and abduction were all graded as 3-/5 due to partial ROM was demonstrated against gravity, shoulder external rotation was graded as 2-/5 due to partial ROM was demonstrated in gravity eliminated position, and shoulder internal rotation grading was deferred. Elbow flexion, extension, and general periscapular motion were all graded as 3/5.

Activities of Daily Living

The patient demonstrated functional limitations of being unable to work above the head, being unable to work at shoulder level, restricted in lifting objects from any positional height, and restricted in reaching behind her back.

Barriers

The patient was orientated x 3. No emotional, language, or learning barriers were identified.

Evaluation

According to the *Guide to Physical Therapist Practice*, 2nd edition, the patient was classified as falling within pattern 4I.[16] Pattern 4I is defined as "impaired joint mobility, motor function, muscle performance, and range of motion associated with bony or soft tissue surgery." A good prognosis was assigned to the patient due to the fact that no problems were identified that would cause her to fall outside of the surgical procedure indications previously indicated in this article. An excellent prognosis was not given due to the fact that rTSA is considered a salvage procedure and full ROM and strength return is not a typical expectation following this procedure.[17]

Intervention

The patient attended physical therapy 3 times a week for a total of 10 weeks. The patient completed a total of 30 visits. The treatment consisted of progression through the protocol presented in Tables 1 through 3 which clearly show the breakdown of each of the 3 phases with regard to precautions, goals, therapeutic interventions, and progression. The protocol was sent to the referring orthopaedic surgeon for review. The surgeon reviewed and agreed to the guidelines and intervention progression.

During the protected phase of 0 to 6 weeks, the patient was educated on the previously stated ROM restrictions (Table 1). The patient was also instructed that she was able to wean herself from the sling per tolerance; however, the patient was instructed to wear the sling in public for the next 3 weeks for protection. Since the patient at the initial evaluation ROM assessment demonstrated passive ROM near the restricted level, PROM was done gently and with caution as not to create instability. Grade I oscillations were performed intermittently during the PROM exercises for pain management. Grade II mobilizations were not performed due to significant early PROM ability and fear of creating instability. The exercises at this point focused on creating stability and enhanced neuromuscular control. The modalities of cold pack and interferential stimulation were used for pain management. The goals of the protective phase were to decrease pain, increase ROM to restricted range, and educate patient on postop restrictions.

Phase II, the restoration phase, was begun at 6 weeks and extended to approximately 12 weeks postop. Criteria for progression included minimal pain and achievement of proper biomechanical controlled ROM. Proper biomechanical controlled motion is depicted as without aberrant and/or compensatory movement patterns. Precautions included no heavy lifting, no strenuous ADLs, and no resistive exercise to the subscapularis ie, no resistive internal rotation. This was to ensure sufficient healing of the reattached subscapularis muscle. The goals of phase II were to maximize ROM without creating instability and progressively regain strength and neuromuscular control with movement. Once proper biomechanics were achieved with AROM, light resistance was initiated to the upper extremity. Initially isotonic exercise in short lever positions that isolated muscle groups were implemented then progression to isotonic exercises that used long lever arms with coupled muscle groups were executed.

Phase III, the Functional Activity phase began at 12 weeks postop. If pain was minimal and sound strength allowing proper biomechanical controlled movement was seen, the patient was allowed to resume functional activities with the upper extremity. Gradual return to leisure ADLs was permitted with avoidance of high impact activity that required sudden lifting or pushing/pulling motions.

Table 1. Rehabilitation Protocol for Reverse Total Shoulder Replacement (with subscapularis reattachment)
Phase One – The Protected Phase (0-6 weeks postop)

Precautions	Goals	Pain Management	Manual Therapy
- ER to 40° - Flexion to 140° -Abduction to 90° (with neutral rotation) - No active IR - No shoulder extension past midline (anatomical position) - No combined shoulder ext/ adduction /IR (ie, reaching behind back)	- Pain control - Achieve ROM (within restrictions) - Educate patient in postoperative restrictions	- Ice initially - Hot and/or cold pending patient preference - Electrical stimulation	- Grade I and II mobilizations to gleno-humeral joint - Scapulo-thoracic joint mobilizations - Manual resistance for periscapular strengthening (in planes and PNF diagonals)

Exercise Therapy	Home Exercise Program
- Shoulder isometrics - Shoulder isometric holds - ROM: passive progressing to active assistive then active ROM per patient pain tolerance and demonstration of good control of movement pattern - Grip and wrist strengthening	- Pendulum swings - Pulleys within ROM restrictions - Cane/wand exercises within ROM restrictions - Scapular clocks - DonJoy Iceman™

Table 2. Rehabilitation Protocol for Reverse Total Shoulder Replacement (with subscapularis reattachment)
Phase Two – The Restoration Phase (6-12 weeks postop)
Criteria for progression:
- Minimal pain
- Achievement of proper biomechanical controlled ROM

Precautions	Goals	Pain Management	Manual Therapy
- No heavy lifting - No strenuous IADLs - No resistive exercise to subscapularis active IR only	- Maximize ROM without causing instability - Progressively regain strength and neuromuscular coordination	-PRN - Hot and/or cold pending patient preference - Electrical stimulation	- Grade III and IV mobilizations to GH joint (only if adhesive capsulitis is developing)

Exercise Therapy	Home Exercise Program
- Continue AROM with emphasis on biomechanics - Upper Body Ergometer (low resistance) - Begin to add light resistance to UE exercise: Start with isotonic exercises that isolate muscle groups in a short level arm positions. Exercises include Bicep curls, triceps extensions, shoulder shrugs, scapular depressions, ER in adduction with Theraband, scapular rows, and supine serratus punches. Progress to isotonic exercises that synergistically couple muscle groups within the scapulohumeral rhythm. Exercises include dumbbell shoulder scaption, flexion and abduction; supine and side lying rhythmic stabilization with dumbbell; prone horizontal abduction and scaption; and wall push-ups.	- Continue with Phase I HEP if ROM gains needed - Theraband exercises

Exercises were progressed to include resistive exercise to the subscapularis (ie, resistive internal rotation) and more advanced resistive exercise were implemented, including PNF high and low D1 and D2 Theraband resistance patterns. Exercises from Phase II were continued with increase in volume and intensity. A home maintenance program was established and adjusted appropriately as progress reached a plateau.

OUTCOMES

The patient was reassessed every 2 weeks toward the established goals set at the time of the initial evaluation. A total of 5 interim reassessments were completed, including the final discharge. The goals established were impairment goals of pain, ROM, and strength and functional limitation goals of material handling and nonmaterial handling. The patient status at the time of initial evaluation was that of a patient with moderate pain in the left shoulder accompanied by significant loss of active and passive range of motion. Full assessment was carried out at 5 interim time points, roughly 2 weeks apart and the results of each of these interim evaluations are presented in Table 4. The patient showed steady gains from each interim assessment to the next, except between assessment 4 and 5, when ROM and strength did not change. At that juncture it was felt that the patient had reached her near maximum medical improvement and was ready for commencement of a home maintenance program. The patient status at the time of discharge, as clearly presented in Table 4 and Figures 2, 3, and 4 was minimal pain in the left shoulder with minimal loss of both active and passive ranges of motion in all movements. Muscle strength had improved and was generally just below that of the opposite limb and elbow range of motion and strength were normal. With regard to general mobility of the upper extremity, the patient was able to reach overhead, to reach behind her back to the level of L2, and able to lift 5 lbs overhead and lift 10 lbs from floor to waist and waist to shoulder with the affected arm.

Table 3. Rehabilitation Protocol for Reverse Total Shoulder Replacement (with subscapularis reattachment)
Phase Three – The Functional Activity Phase (>12 weeks postop)
Criteria for progression:

- Minimal pain with ROM
- Significant strength return allowing proper biomechanical movement with control

Precautions	Goals	Pain Management	Manual Therapy
- Avoid high impact activity that requires sudden lifting or pushing/pulling	- Continue to improve strength and endurance - Gradual return to leisure ADLs - Home maintenance program	Minimal required for this phase – occasional hot/cold as per patient preference postexercise	Not required for this phase

Exercise Therapy	Home Exercise Program
- Continue with Phase II increasing volume and intensity - Resistive IR with Theraband - Theraband resistive PNF high and low D1 and D2	Continue with HEP as a home maintenance program.

Table 4. Biweekly Progress Note Flow Sheet

Name:	Initial Evaluation	Interim Date #1	Interim Date #2	Interim Date #3	Interim Date #4	Interim Date #5 (Discharge)
Goal: Decrease or eliminate pain to allow return to ADLs						
Measure: Left sh. pain	**6/10**	**5/10**	**6-8/10** pain increase due to start of phase II activities	**4-5/10**	**2-3/10**	**2/10**
Goal: Restore functional ROM						
Measure:	**A P**	**A P**	**A P**	**A P**	**A P**	**A P**
Left sh. Flex.	70º 130º	105º 140º	110º 140º	120º 145º	145º 160º	145º 165º
Abd.	70º 90º	90º 90º	105º 130º	110º 145º	140º 160º	140º 160º
ER	Unable 40º	Unable 40º	50º(AA) 60º	60º(AA) 70º	65º(AA) 75º	65º(AA) 75º
IR	NT 50º	NT 55º	55º 60º	60º 65º	60º 65º	60º 65º
Goal: Maximize strength return						
Measure:						
Left sh. Flex.	3-/5	3/5	3/5	3+/5	4-/5	4-/5
Abd.	3-/5	3/5	3/5	3+/5	4-/5	4-/5
ER	2-/5	2/5	2/5	2+/5	3-/5	3-/5
IR	NT	NT	3/5	3+/5	4-/5	4-/5
Elbow Flex.	3/5	3+/5	4-/5	4/5	5/5	5/5
Elbow Ext.	3/5	3+/5	4-/5	4/5	5/5	5/5
Periscapular	3/5	3+/5	4-/5	4/5	5/5	5/5
Goal: Return to prior ADL level and maximal reduce functional limitations						
Measure:						
Work above head	UNABLE	UNABLE	UNABLE	PARTIAL	ABLE	ABLE
Work at sh. level	UNABLE	PARTIAL	ABLE	ABLE	ABLE	ABLE
Reach behind back	RESTRICTED	RESTRICTED	L5	L4	L2	L2
Lift wt. above overhead	RESTRICTED	RESTRICTED	1#	2#	3#	5#
Plan of Care	Δ Cont. Rx Δ Change Rx **X** New goals	**X** Cont. Rx Δ Change Rx Δ New goals	**X** Cont. Rx Δ Change Rx Δ New goals	**X** Cont. Rx Δ Change Rx Δ New goals	**X** Cont. Rx Δ Change Rx Δ New goals	**Discharge**

Figure 2. Patient demonstrating active (a) and passive (b) range of shoulder f exion at discharge.

Figure 3. Patient demonstrating active (a) and passive (b) range of shoulder abduction at discharge.

DISCUSSION

The intent of this case report was to report on a postoperative management protocol for a relatively new surgical procedure, rTSA, which is gaining popularity, for the surgical management of rotator cuff deficient shoulder arthrosis pathologies. Despite the current insufficiency in the literature regarding postoperative physical therapy management, the protocol developed here appeared to have provided the patient good outcomes without complication. The literature did provide data regarding shoulder elevation changes pre- and post-rTSA. Indeed, Sirveaux et al, in a study of 80 patients who underwent a rTSA, showed a mean active forward elevation increase from 73º to 138º;[18] however, little information was given as to the exact protocol used to achieve these results. In another study by Frankle et al, 60 patients who underwent rTSA demonstrated a mean increase of shoulder flexion from 55º to 105.1º and increased shoulder abduction from 41.4º to 101.8º.[19] Once again there was little detail provided as to the rehabilitation protocol used to achieve these results. The patient in this present case report demonstrated increases in both active shoulder flexion and abduction, as seen in Figures 2 and 3, from 70º to 145º and from 70º to 140º, respectively. The patient presented here did not regain full active shoulder external rotation, as seen in Figure 4, and unfortunately developed a positive hornblower's sign. The hornblower's sign is where the examiner supports the patient's arm at 90º abduction in the plane of the scapula, the elbow is flexed to 90º, and the patient is asked to externally rotate the forearm against the resistance of the examiner's hand.[20] If the patient cannot externally rotate the shoulder, then the patient is deemed to have a positive hornblower's sign, indicating a deficient teres minor muscle. The relevance of this finding suggests that although the rTSA was successful in restoring shoulder elevation via inverting the bony configuration of the joint and changing the joint axis of the shoulder, it may not have been successful in allowing the deltoid muscle to function as an effective external rotator. Gerber et al reiterated this finding with the suggestion of combining a latissimus dorsi transfer and rTSA to address the lack of return of external rotation and subsequent positive hornblower's sign.[21]

Limitations of this case report, as with many case reports, is lack of applicability to a greater patient population and inability to establish cause-effect relationship without randomized control methodology. Another limitation would be not using standardized shoulder score tables such as the American Shoulder and Elbow Surgeons Score or Simple Shoulder Test to further objectify functional outcomes with this protocol. A final limitation would be not assessing the contribution of upward rotation of the scapula in contributing to shoulder elevation. The scapulohumeral rhythm of a normal shoulder has roughly a 2:1 ratio of full shoulder elevation occurring at the GH joint and scapula, respectively. A few of the available studies on this subject have indicated that with the rTSA the scapulohumeral rhythm changes and upward rotation of the scapula contributes to a greater degree of shoulder elevation than seen with a normal shoulder.[22,23]

A future research may include continued use of the established protocol to a larger patient population to determine its value. Another future research possibility would be the application of other standardized shoulder tests with this protocol to more effectively capture patient outcomes in relation to patient's functional needs.

CONCLUSION

The rTSA has been gaining acceptance and increased use since its FDA approval in 2004. Establishing best practice postoperative therapy management of this surgical procedure is critical to the success of this procedure and the welfare of the patients who undergo this surgery. This case report established a protocol for postoperative management for the rTSA. The patient who underwent the physical therapy treatment following this protocol had success-

ful outcomes without iatrogenic complications. The authors believe that the protocol established may be a viable guideline for future postoperative therapy management of patients who have undergone an rTSA procedure. Further studies applying this protocol to a larger patient population would be beneficial to assist in determining its effectiveness.

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Continuous Infusion of a Local Anesthetic Through a Pain Pump Following Orthopaedic Surgical Procedures: Implications for Physical Therapy Outcomes

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INTRODUCTION

The use of pain pumps to provide continuous infusion of local anesthetic directly into the surgical site for postoperative pain relief has gained popularity in orthopaedic, general, and cardiothoracic surgeries. Although the use of these pumps is not a physical therapy treatment decision, the evidence suggests that a physician's decision to use or not to use the pain pump can directly affect physical therapy outcomes and patient satisfaction. Potential benefits include overall decreases in pain, decreased use of narcotic pain medications, faster and less painful joint mobilization, and shorter postoperative hospital stay.

There are several methods used for postoperative pain control, including opioid (narcotic) analgesics, nonsteroidal anti-inflammatory drugs (NSAIDs), and epidural or peripheral nerve blockade. However, these treatments can lead to significant side effects. Opioid analgesics can cause sedation, urinary retention, nausea, vomiting, constipation, and even respiratory depression.[1] Because narcotics are usually given every 4 to 6 hours, there may be "break through" pain before the next dose is received. When taking NSAIDs, there is a risk for renal or hepatic failure or bleeding.[1] The risks associated with epidural and peripheral nerve blockade include hematoma, abscess formation, and nerve injury.[1]

The use of local or regional analgesia can be beneficial in that pain can be decreased without global impairment of the central nervous system (CNS) and generally do not cause the side effects associated with narcotic usage.[2] Delivery of a bolus injection of a local anesthetic such as bupivacaine after joint replacement surgery has been common practice for some time.[2] However, continuous infusion through a pain pump eliminates the need for repeated injections.[3]

These pain pumps, also referred to as anesthetic continuous infusion devices (ACIDs)[4] or pain control infusion pumps (PCIPs),[5] provide continuous infusion of a local anesthetic (often 0.5% bupivacaine or ropivacaine) directly into the surgical site for postoperative pain management. The system consists of an elastomeric pump (multilayer membrane with protective PVC cover) containing the local anesthetic, which is infused through a catheter placed by the surgeon. The pump provides positive pressure of approximately 10 PSI and is therefore portable and can be attached to the patient's dressing or placed in a carrying pouch. A capillary flow-restricting orifice located at the end of the tubing controls the flow rate.[6] Depending on the size and volume of the pump, infusion of the local anesthetic usually lasts 2 to 5 days. The delivery accuracy is ±15% (95% CI) of the labeled infusion rate, which is typically 2mL/hr.[7] Exact placement of the catheter is determined by the surgeon, but there are recommended placements provided by pump manufacturers. The recommended maximum 24-hour dose for Bupivacaine (Marcaine, Sensorcaine) is 400mg.[8]

POTENTIAL SIDE EFFECTS WITH CONTINUOUS INFUSION OF LOCAL ANESTHETIC THROUGH A PAIN PUMP

At toxic doses, bupivacaine can cause CNS or cardiac side effects such as cortical irritation, seizures, or arrhythmias. Intravascular injection should be avoided.[2] Initial symptoms of CNS toxicity include light-headedness, dizziness, nystagmus, sensory disturbances, restlessness, disorientation, and psychosis. Slurred speech, muscle twitching, and tremors often precede seizures. The symptoms of cardiac toxicity include hypotension, bradycardia, and cardiac arrest.[9] The most common complications associated with use of a pain pump involve dislodgement of the catheter, leaking of the catheter connection, or clogging of the catheter. It is important to place the catheter under direct or arthroscopic visualization and immediately tape it in place and flush with saline or bupivacaine.[2] Other reported complications with use of the wound catheters include tissue necrosis, surgical wound infection, and cellulitis.[10]

EVIDENCE FOR USE OF CONTINUOUS ANESTHETIC INFUSION PUMPS

In general, any negative effect sizes presented in this review of the literature represent decreases in pain on VAS, decreases in narcotic usage, or decreases in other variables in groups of patients who were given pain pumps vs. a control group. Liu et al[11] performed a systematic review of 44 randomized controlled trials in which continuous wound catheters were used postoperatively. These studies used 16 to 100 subjects, and primarily used bupivacaine (n = 34) or ropivacaine (n = 9) ranging from 0.2% to 0.5% as the local anesthetic. For cardiothoracic (n = 14), orthopaedic (n = 12), general surgery (n = 11), and gynecology-urology (n = 7) subgroups combined, mean VAS pain scores were lower in the treatment group at rest (effect size ¯10mm (95% CI ¯7 – ¯ 13mm) and with activity (effect size ¯22mm (95% CI ¯13 – ¯32). In the orthopedic subgroup, the weighted mean difference between experimental and control groups for VAS pain at rest was ¯14mm (95% CI ¯8 – ¯21), and ¯22mm (95% CI ¯13 –¯32) with activity. For all groups combined, daily consumption of opioids, (effect size ¯11mg (95%CI ¯7 – ¯14)), need for opioid rescue (41% vs. 66%), and incidence of postoperative nausea and vomiting (24% vs. 40%) were reduced with the pain pumps. The percentage of patients rating their analgesia as "excellent" was also greater in the continuous wound catheter group (43% vs. 13%), and length of hospital stay was reduced by a day in the continuous wound catheter group (7 vs. 8 days). This effect was also significant in the orthopaedic subgroup (6 vs. 8 days). In the orthopaedic group, 13 of 16 RCTs reported significant ($p < 0.05$) analgesic efficacy either as reduced pain or reduced opioid use. Pain scores in the immediate post-operative period were significantly ($p < 0.05$) reduced in 12 of 16 RCTs, and 11 RCTs reported reduction through postop days 2 through 5.[11] Several of the RCTs reported in this systematic review will be discussed later in this review of the literature.

Hoenecke et al[12] performed a blinded, randomized controlled trial in which 26 patients undergoing ACL reconstruction with patellar tendon autograft were randomized into placebo or bupivacaine groups. Catheters were placed into the donor site of the patellar tendon and the anterior fat pad. After surgery, all patients received an initial bolus injection consisting of 25mL of 0.25% bupivacaine and 5mg of morphine into the patellar tendon donor site and intra-articular space. The placebo group received continuous infusion of normal saline and the experimental group received 0.25% bupivacaine, both for 48 hours at a rate 2mL/hour. Patients were given instructions to remove the catheter themselves or to have their physical therapist remove it, and no complications were reported. Patients were asked to assess their pain on awakening in the PACU and at 2, 4, 12, 18, 24, 36, and 48 hours postoperatively. In addition to rating pain on a VAS, patients were given a similar line on which to rate pain relief, with 0 representing "no relief" and 10 representing "complete relief." Narcotics used were converted to a dose equivalency (DE) system. For the 48-hour period, patients in the bupivacaine group had significantly lower VAS pain scores than the placebo group, with an effect size of ¯1.3 (95%CI ¯0.538 – ¯2.06). The bupivacaine group also had significantly higher VAS pain relief scores with an effect size of 1.66 (95% CI 0.7–2.6). Although the bupivacaine group required less narcotic pain medication, the difference was not statistically significant.[12]

There have also been several studies performed using pain pumps for postoperative pain relief after shoulder surgeries. In a double-blind study by Savoie and colleagues,[5] 62 patients undergoing subacromial decompression surgery (average age 43.24 years, range 19-73 years) were randomly assigned to receive continuous infusion of either bupivacaine 0.25% or normal saline 0.9% at home after the procedure. The catheter was placed into the subacromial area just beneath the resected edge of the acromion, was left in place for 48 hours, and was removed by the patient or a family member. There was a statistically significant difference ($p < .05$) in the VAS pain ratings on the day of surgery, as well as on postop days 1-5. On postop days 1-5, the patients in the bupivacaine group also used significantly less narcotic and non-narcotic medications ($p < .05$).[5]

Barber et al[4] performed a prospective, blinded, randomized study of 50 patients (average age 47.4 ±15.5 years, range 19–73 years) undergoing outpatient arthroscopic shoulder surgeries including rotator cuff repair, SLAP lesion repair, subacromial decompression, and arthroscopic capsular reefing. The patients were randomized to receive 100mL of either normal saline or 0.5% bupivacaine in the pump after surgery, at a flow rate of 2.08 mL/hour. For subacromial and rotator cuff surgery, the catheter was placed in the subacromial space. For glenohumeral surgery, such as Bankart or SLAP repair, it was placed in the glenohumeral joint. Catheters were left in place for 48 hours at home. Likert and VAS pain scores were measured at 1, 2, and 8 hours, then on days 2, 3, 4, 5, 6, 7, and 8. For both pain scales, the means were lower in the bupivacaine group than in the saline group at all of these times, with statistically significant ($p < .05$) differences at all times except days 2 and 3. The use of supplemental oral medication was greater in the patients in the saline group than in the bupivacaine group, but the differences were not statistically significant.[4]

Ropivacaine is another local anesthetic that is sometimes used in pain pumps for postoperative pain relief. Ropivacaine has vasoconstrictive properties and less cardiotoxicity compared with bupivacaine.[13] Ropivacaine is chemically related to bupivacaine, but it is also reported to have anti-inflammatory effects.[14] The following two studies use continuous infusion of ropivacaine after orthopaedic surgeries. Bianoconi et al[13] performed a study on patients (age 38-81 years) undergoing elective hip or knee arthroplasty (direct lateral approach for hip, median parapatellar approach for knee). The experimental group received continuous infiltration of ropivacaine 0.2% at 5mL/hour, while the control group received saline solution. Catheters were left in place for 55 hours after the surgery. There were 19 patients in the control group and 18 in the ropivacaine group. Significant differences in pain intensity between groups were found at rest at 4, 8, 12, 24, 48, and 72 hours postoperatively. Significant differences between groups were also found for pain with passive mobilization at 4, 8, 12, 24, 48, and 72 hours postoperatively.[13] See Table 1 for effect sizes.

In the ropivacaine group, satisfactory pain control was still observed at 72 hours after surgery, even though ropivacaine infusion had been discontinued for 17 hours. Although mean VAS scores were significantly greater (statistically) with mobilization than at rest in both groups, the increases in pain with mobilization were not clinically significant in the ropivacaine group. In the control group, effect sizes for increase in pain with mobilization were 30mm (95%CI 26.42–33.58) at 24 hours, 35mm (95%CI 30.94–39.06) at 48 hours, and 28mm (95%CI 24.6–31.4) at 72 hours. In the ropivacaine group, effect sizes for increase in pain with mobilization were 10mm (95%CI 8.51–11.49) at 24 hours, 10mm (95%CI 9–10.99) at 48 hours, and 7mm (95%CI 6.22–7.78) at 72 hours.[13] With an MCID of 20mm on the VAS,[15] these increases in pain with mobilization in the ropivacaine group were not clinically significant. This has important implications for physical therapy in that patients may be able to tolerate postoperative treatment better with a pain pump. Mean amounts of Diclofenac used as rescue medication (to control "breakthrough" pain occurring before the next regularly scheduled dose of pain medication) were significantly lower in the ropivacaine group compared to the control group at 0 to 24 hours (effect size ¯240mg (95%CI ¯236.36 – ¯243.64)), 24–48 hours (effect size ¯45mg (95%CI ¯42.02 – ¯47.98)), and 48 – 72 hours (effect size ¯40mg (95%CI ¯38.54– ¯41.67)). A significant reduction in length of hospital stay was also found in the ropivacaine group compared to the control group, with an effect size of ¯2.45days (95%CI ¯1.92 – ¯2.98). More patients in the ropivacaine group described their analgesia as good or excellent compared to those in the control group.[13]

In a prospective, randomized, double-blind study, Gottschalk et al[14] compared the effects of continuous infusion of 2 different

Table 1. Ef ect Sizes for Decreased VAS Pain Ratings in Ropivacaine Group vs. Control

	Pain at Rest	Pain with passive mobilization
4 hours	-14mm (95% CI ¯8.29 – ¯19.71)	¯31mm (95% CI ¯26.85 – ¯35.15)
8 hours	¯20mm (95% CI ¯16.79 – ¯23.21)	¯40mm (95% CI ¯36.82 – ¯43.18)
12 hours	-23mm (95% CI ¯20.02 – ¯25.98)	¯44mm (95% CI ¯41.34 – ¯46.66)
24 hours	¯28mm (95% CI ¯25.02 – ¯30.98)	¯48mm (95% CI ¯45.34 – ¯50.66)
48 hours	¯20mm (95% CI ¯17.13 – ¯22.87)	¯45mm (95% CI ¯41.79 – ¯48.21)
72 hours	¯13mm (95% CI ¯10.88 – ¯15.12)	¯34mm (95% CI ¯31.13 – ¯36.87)

concentrations of ropivacaine for 48 hours postoperatively in 41 patients undergoing rotator cuff repair or anterior shoulder stabilization procedures. Patients were randomized to receive a pump containing 300mL of saline, ropivacaine 2mg/mL, or ropivacaine 3.75mg/mL. The use of ropivacaine 3.75mg/mL resulted in significantly lower ($p < .0005$) pain scores at rest compared to the saline group throughout the duration of the study. VAS pain scores were lower in the group given 3.75mg/mL ropivacaine than in the group receiving 2mg/mL at 4 and 48 hours after surgery. The patients given 2mg/mL ropivacaine showed lower VAS scores at rest until 48 hours after surgery when compared to the saline group, except at 3 and 4 hours. During mobilization, VAS values in patients receiving 3.75mg/mL ropivacaine were significantly lower than those in the saline group ($p < .0005$) and the group receiving 2mg/mL ropivacaine. The group receiving 2mg/mL ropivacaine also showed significantly lower VAS scores than the saline group ($p < .005$). Cumulative consumption of piritramide (similar to morphine) for pain was significantly lower in both ropivacaine groups when compared to the saline group at 24 hours ($p < .005$) and 48 hours ($p < .05$) postoperatively. There were no differences between the two ropivacaine groups in terms of pain medication usage.[14] The results of this study suggest that ropivacaine 3.75mg/mL is both effective and safe for controlling pain after shoulder surgery.

The following is a brief synopsis of the patient case that prompted this review of the literature. The patient was a 74-year-old male status post right total knee arthroplasty (TKA) (in 2007) who had also had a left TKA 2 years previously at the same hospital by the same surgeon, and received treatment from the same physical therapist. The important difference was that the patient was given the On-Q® PainBuster® postoperatively for the current surgery, but not after the surgery in 2005. Subjectively, the patient reported superior pain relief with the On-Q® PainBuster® when compared to his previous surgery. At all postoperative physical therapy sessions when the On-Q® pump was used, pain ratings were decreased by at least 1 on the visual analog scale, level of assistance was the same or decreased, and passive flexion range of motion was increased compared to the earlier procedure without the On-Q® pump. Ambulation distances were slightly shorter on postop day 2 with the On-Q® pump, but the patient was able to ambulate with a step-through pattern, which was not observed without the use of the On-Q® pump.

Because these continuous infusion devices are not used by all surgeons, direct feedback from physical therapists to surgeons regarding patient outcomes may be useful to surgeons making treatment decisions about postoperative pain control. Although the use of a pain pump is not a physical therapy treatment decision, the decision to use or not to use the pain pump appears to directly affect physical therapy outcomes and patient outcomes and satisfaction.

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Physical Therapy for Pelvic Stress Fractures in a Female Military Recruit: A Case Study

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Department of Physical T erapy, University of Florida, Gainesville, FL

ABSTRACT

Background and Purpose: In the basic combat training (BCT) environment, stress fractures are commonly reported overuse injuries due to the increase in frequency, intensity, and duration of activity recruits are required to perform. Particularly troublesome are femoral neck stress fractures for the risk of complication and pubic rami stress fractures because of the biomechanical imbalance. The purpose of this case study is to highlight the Ft. Jackson hip pain clinical practice guidelines in the physical therapy evaluation of a soldier-in-training with hip pain by describing outcomes for a patient with pelvic stress fractures.

Case Description: A 28-year-old female presented with left hip pain preventing her from continuing BCT. Scores on the HOOS/WOMAC (Hip Disability and Osteoarthritis Outcome Scale/Western Ontario and McMaster Universities Osteoarthritis Index) and SF-12 report decreased function, and imaging shows left IPR and SPR stress fractures. The patient was seen for 67 visits over 20 weeks. Treatment consisted of hip musculature strengthening, aquatic therapy, and a walk-to-run progression.

Outcomes: The patient demonstrated clinically significant improvements in pain, SF-12 and HOOS/WOMAC, and on imaging.

Discussion: In the soldier-in-training with hip pain, Ft. Jackson's hip pain clinical practice guideline is an easy tool to use to direct care and rule out high-risk femoral neck stress fractures. Furthermore, treatment is monitored and progressed carefully to return soldiers to training safely. Future research is needed to validate the HOOS in the 18 to 35 year-old population, to determine if there is a better outcome measure for return to run in soldiers with pelvic stress fractures, and validate the Ft. Jackson Hip clinical practice guidelines.

Key Words: hip, pain, clinical practice guideline

BACKGROUND

Basic combat training (BCT) is a 9-week program designed to turn civilians into soldiers.[1] Mandatory training activities are comprised of running, jumping, marching, kneeling, climbing, dangling, swinging, crawling, and squatting components, all conducted under US Army Training Doctrine TRADOC Regulation 350-6. Basic combat training is gender integrated at Ft. Jackson, the largest BCT post in the Army, and because of this, all soldiers in a company perform the same activities, eat in the same dining facility, train under the same conditions, and get the same chance for rest in the same barracks. Basic combat training has been studied multiple times regarding injuries because of the standardization of the training provided.[2,3]

Ft. Jackson, like all BCT posts, has a Physical Therapy and Rehabilitation Program (PTRP). The PTRP was created so that soldiers-in-training (SIT) who develop an injury that removes them from training for more than one week (eg, traumatic and stress fractures, any injury requiring surgical intervention) can successfully rehabilitate under proper guidance and ultimately return to training.[2,4] The orthopaedic, podiatric, occupational therapy, and physical therapy clinics at Moncrief Army Community Hospital serve as the recommending branches for PTRP. Once the recommendation is made, the soldier is given a profile; a form detailing the soldier's restrictions, and capabilities that is adjusted throughout his or her stay at PTRP as rehabilitation goals are met. A soldier can be returned to training only after all limitations are lifted and they are cleared medically. An Army Physical Fitness Test (APFT), composed of a timed 2-mile run and 2 minutes for push-ups and sit-ups, is administered and the soldier must meet predetermined standards depending on what week of training they are being returned. A soldier may be returned either to the week of training they were in when recommended to PTRP or to the last week of training in which s/he completed all mandatory events.[5]

Recruits in the BCT environment face both acute and overuse injury. Knapik et al describe acute injury as sudden energy exchange traumas whereas overuse injuries tend to be a consequence of cumulative microtrauma.[3] Stress fractures are a commonly reported overuse injury documented in nearly every bone in the human body. First described in recruits participating in initial military training, stress fractures can be partial or complete insults to the bone from repetitive loads, smaller than the energy exchange needed to break the bone at one point in time. Many recruits face a sudden increase in all three dimensions of physical activity: duration, frequency, and intensity, without enough rest between bouts. This build up of excessive repetitive stresses causes the imbalance in bone formation and resorption that ultimately results in bone injury.[6] Especially troublesome is the femoral neck stress fracture as, if not detected promptly and accurately, can lead to a complete fracture, necessitating surgical fixation. Furthermore, complications can arise in the form of nonunion, avascular necrosis, and the possible need of hip replacement.[7]

Some of the well-documented risk factors for stress fracture include history of cigarette smoking, decreased muscular endurance, lower aerobic capacity, and female gender.[3] Female recruits may be more at risk for a pubic ramus stress fracture because of their pelvic structure.[1,6] The increase in activity increases the tensile pull of the adductor and external rotator musculature on the narrow pubic rami.[8] These stresses may be more prevalent in shorter female military recruits who are required to overstride to maintain the Army's 30-inch marching step.[9]

Recruits usually report that their symptoms begin around the second or third week of training as the forces have had time to accumulate.[1,10] As described by Rauh et al in 2006,[11] Ft. Jackson providers diagnose stress fractures on clinical presentation and imaging results. The patient describes pain in the hip or groin of insidious onset without history of trauma that is increased with weightbearing activities and relieved with rest; x-rays or bone scan imaging confirm a stress fracture at the complaint site.[11] It is important to note, however, that symptoms may be mild in the early stages, leading to a diagnosis weeks after the initial injury occurred.[12] It is also of value to be aware that it may take up to 3 weeks for x-rays to show the presence of a stress fracture.[13] For stress fracture healing to begin, it is recommended that the patient begins a period of limited weightbearing for up

to 6 weeks, followed by a progression to full weight-bearing. Once full weight-bearing is achieved without pain, low impact activities can begin with pain being the guide to progress to higher impact activities.[6] There exists a discrepancy in healing times described in the literature; the reported range is 6 weeks to 2 years for complete bone remodeling and repair.[6,8,12] The purpose of this case study is to highlight the Ft. Jackson hip pain clinical practice guidelines in the physical therapy evaluation of a soldier-in-training with hip pain by describing outcomes for a patient with pelvic stress fractures.

CASE DESCRIPTION

History

PVT S, a 28-year-old 4'11" female recruit in her 7th week of Basic Combat Training, presented to the Physical Therapy clinic with a complaint of "burning" left hip pain of 4 week duration, insidious onset. PVT S reported that prior to beginning BCT, she participated in physical training with her recruiter and that she had been running for 15 to 30 minutes, 1 to 4 times per week. During her time at the reception battalion, she had the opportunity to purchase footwear for her neutral-arched feet and was able to pass the initial physical fitness assessment. PVT S stated that her pain began on or about training day 18 during physical training. In accordance with Ft. Jackson hip pain clinical practice guidelines (Figure 1), which states that any soldier-in-training with a complaint of hip pain is assumed to have a femoral neck stress fracture until it can be ruled out, she had been placed on left leg toe-touch weightbearing precautions with crutches upon her visit to the Urgent Care Clinic at the start of week 7 and given a profile preventing her from running, jumping, and marching until seen in the PT clinic. At our PT clinic, she denied any recent trauma or pertinent past medical history, but did mention a prior history of cigarette use when asked. Because of the limitations imposed, she reported not participating in physical training, but stated she had completed all mandatory training activities to date. Her main goal for therapy was to return to training.

Examination

The examination began as PVT S was called into the clinic. She presented with a mildly antalgic gait when asked to walk without using the crutches. No swelling or ecchymosis was noted at the hip and there were no obvious deformities or differences in the lower extremities on visual inspection. Using the numeric rating scale for pain, PVT S was asked to rate her current pain with 0 as a measure of no pain and 10 the measure of the worst possible pain; she stated her pain was 8/10. She was tender to palpation over the pubic symphysis. Bilateral active lower extremity range of motion (ROM) was full in all directions with PVT S complaining of pain at end range hip flexion on the left. Manual muscle testing (MMT) revealed her left lower extremity strength was at least 4/5 in all planes; pain was present with resisted hip flexion and adduction. PVT S was exquisitely

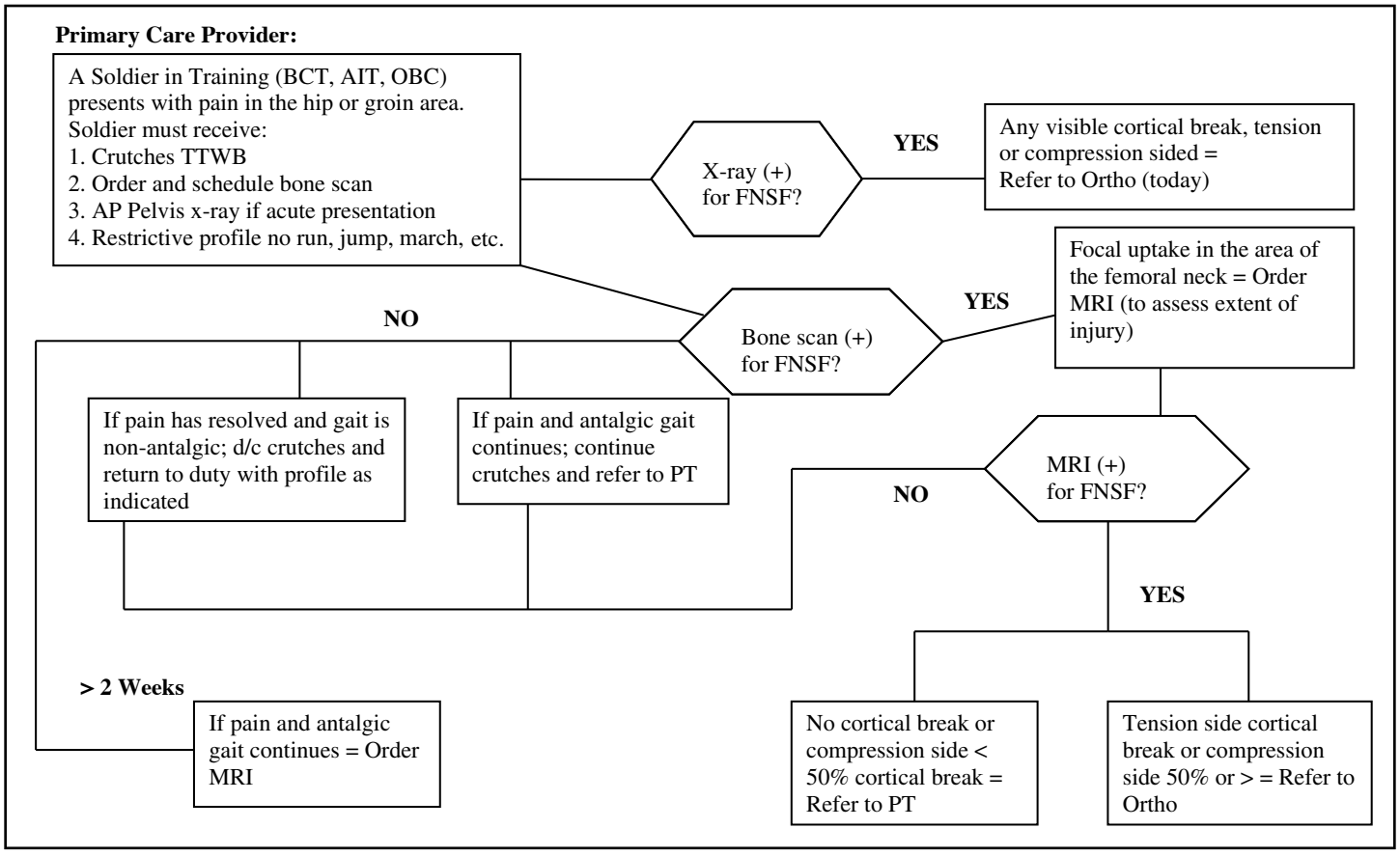

Figure 1. Fort Jackson Hip Pain Clinical Practice Guidelines Courtesy of Moncrief Army Community Hospital.

painful throughout her groin with FABER testing, but demonstrated negative results with hip scour, knee up and over maneuver, and SLR. Because low back pain and muscle strains can refer pain to this region, injuries to the knee and lumbar spine were ruled out through flexibility assessment and MMT. Bone scan results taken at the initial onset of her hip pain 4 weeks prior to this visit showed minor uptake at the left inferior pubic ramus (IPR) consistent with minimal stress fracture. Due to the sudden increase in pain, an x-ray was ordered by the therapist, as dictated by the Ft. Jackson hip pain CPG.

PVT S was asked to complete the Hip Disability and Osteoarthritis Outcome Scale (HOOS) at her initial evaluation and upon subsequent re-evaluations at 9 and 20 weeks postinjury. The HOOS consists of 5 subscales to assess the opinion a patient has regarding his/her hip and associated problems, with a scale of 0 indicating extreme symptoms and 100 representing no symptoms calculated for each subscale. On this first visit, PVT S scored 45 on pain, 35 on symptoms, 39.7 on ADL, 31.25 on sports and recreation, and 43.75 in hip-related quality of life. Initial studies show high test-retest reliability (ICC > 0.78)[14] and moderate to good construct validity when compared to the SF-36.[15,16] The SF-12 (12-item Short Form Health Survey) is a shorter version of the SF-36 used to evaluate and monitor changes in a patient's self-reported health status. Scores range from 0, indicating severe limitations resulting from perceived health status, to 100, representative of no limitations; upon first administration, PVT S scored 35.64 on the physical component summary (PCS) and 52.14 on the mental component summary (MCS). The SF-12 PCS and MCS have high test-retest reliability when compared to the SF-36 (0.89 and 0.76 respectively) and moderate to high validity (0.43-0.93 PCS and 0.6-1.07 MCS).[17]

Diagnosis

PVT S's subjective history outlined many risk factors for developing a pelvic stress fracture; her female gender, short stature, and previous history of smoking may have made her more susceptible to this type of fracture. The radiological report returned positive for left lateral superior and medial inferior pubic rami stress fractures (Figure 2). This placed PVT S in the Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated with Fracture practice pattern in the

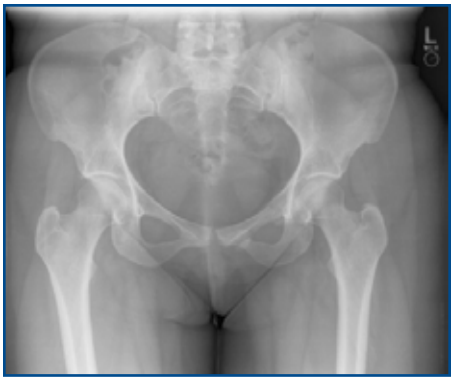

Figure 2. PVT S's initial x-ray showing left lateral SPR and medial IPR stress fracture.

Guide to Physical Therapist Practice. As PVT S no longer fit into the hip CPG, adherence to the algorithm was discontinued.

Prognosis

Pubic rami stress fractures are considered low risk because of their location and the stability of the pelvis. Ordinarily, recruits with this type of stress fracture are encouraged to continue in the BCT environment unless their limitations prevent full participation. PVT S had concurrent stress fractures in her left navicular and bilateral malleoli, so the decision was made to send her to PTRP to allow proper bone healing. PVT S's recovery prognosis was good and she was expected to return to training in 16 to 20 weeks.

Intervention

PVT S left the clinic with a profile (Figure 3) continuing her run, jump, and march limitations and orders for immediate transfer from BCT to PTRP (within 48 hours). PVT S was directed to complete her morning physical training on a stationary bike, perform seated clerical duty, and report to the PTRP PT clinic in one week. A re-evaluation was performed within a week of her transfer, with PVT S complaining of continued pain with all special testing and antalgic gait. The therapist prescribed prenatal vitamins for use as a calcium supplement

PTRP PHYSICAL PROFILE

NAME	LAST 4	PLATOON	GO TO TMC/MACH:			PES/SICK CALL
			X-RAY	LAB	PHARMACY	ORTHO
TODAY'S DATE		DATE ASSIGNED TO PTRP	LOCATION OF INJURY			

UNL = UNLIMITED OP/T = OWN PACE and/or TOLERANCE

CONDITIONING DRILL 1

UNL	OP/T	
☐	☐	Bend and Reach
☐	☐	Rear Lunge
☐	☐	High Jumper
☐	☐	Rower
☐	☐	Squat Bender
☐	☐	Windmill
☐	☐	Forward Lunge
☐	☐	Prone Row
☐	☐	Bent-leg Body Twist
☐	☐	Push-Up

CONDITIONING DRILL 2

UNL	OP/T	
☐	☐	Push-Up
☐	☐	Sit-Up
☐	☐	Straight-Arm Pull
☐	☐	Pull-Up
☐	☐	Leg Tuck

CONDITIONING DRILL 3

UNL	OP/T	
☐	☐	Power Jump
☐	☐	V-Up
☐	☐	Mountain Climber
☐	☐	Leg Tuck and Twist
☐	☐	Single-Leg Push-Up

**CD3 only applies to OSUT/AIT Soldiers

STRETCH DRILL

UNL	OP/T	
☐	☐	Overhead Arm Pull
☐	☐	Rear Lunge
☐	☐	Extend and Flex
☐	☐	Thigh Stretch
☐	☐	Single-Leg Over

MILITARY MOVEMENT DRILL

☐	☐	Verticals
☐	☐	Laterals
☐	☐	Shuttle Sprint

RECONDITIONING PHASE

- ☐ Phase 1 (Cardio & Circuit Tng)
- ☐ Phase 2 (Walk/Run Track & CDs)
- ☐ Phase 3 (Ability Group Run & CDs)
- ☐ 4 for the Core
- ☐ No Run or Jump
- ☐ Run at Own Pace and Distance
- ☐ Unlimited Run

FUNCTIONAL ACTIVITIES

- ☐ All details/activities
- ☐ Police Call
- ☐ Clean Latrine
- ☐ Raking/Sweeping/Mowing
- ☐ Lift/Carry up to _____ pounds
- ☐ Walk/Stand up to ____ minutes

CARDIO ROOM

- ☐ All Cardio
- ☐ Upper Body Bike
- ☐ Stationary Bike
- ☐ Elliptical
- ☐ Stepper

CIRCUIT TRAINING

UNL	OP/T	
☐	☐	All Weight Training
☐	☐	Leg Press
☐	☐	Leg Curl
☐	☐	Heel Raise
☐	☐	Chest Press
☐	☐	Seated Row
☐	☐	Overhead Press
☐	☐	Lat Pull-Down
☐	☐	Lateral Raise
☐	☐	Triceps Extension
☐	☐	Biceps Curl
☐	☐	Trunk Flexion
☐	☐	Trunk Extension

MEDICAL INSTRUCTIONS

- ☐ Crutches
- ☐ Cane
- ☐ Soft Shoes
- ☐ Ice _____ minutes / _____ hrs
- ☐ Elevate ____ minutes/____ hrs
- ☐ Wear brace/splint as directed
- ☐ Medications
- ☐ Multivitamins/Calcium
- ☐ New Shoes:
  - ☐ Cushioned
  - ☐ Stability
  - ☐ Motion Control

OTHER INSTRUCTIONS

- ☐ Cleared to test out of walk run track
- ☐ Cleared to take APFT
- ☐ Cleared to return to training
- ☐ Recommend Convalescent Leave
- ☐ Recommend 5-17

REHABILITATION INSTRUCTIONS

- ☐ Attend rehab in physical/occupational therapy clinic ____ times per week
- ☐ Attend pool therapy _____ Advanced _____ Beginning
- ☐ Perform home exercise program as provided
- ☐ Follow-up appointment on _____
- ☐ No follow up needed

PROFILE EXPIRES ON THE DATE OF THE NEXT FOLLOW-UP

TYPED NAME AND GRADE OF PROFILING OFFICER	SIGNATURE AND CONTACT NUMBER	DATE

RECOMMENDED EXERCISE MODIFICATIONS FOR OWN PACE AND/OR TOLERANCE (OP/T) LIMITATIONS:

LOWER EXTREMITY INJURIES
CONDITIONING DRILLS 1-3

1. Perform lunging and squatting in pain-free ranges of motion to tolerance.
2. Progress to jumping exercises when all other exercises within CD are pain-free. Perform initially by rising up on toes, and then begin jumping with minimal height to tolerance.
3. Progress motion, repetitions, and intensity until standards are met for normal exercise.
4. Begin CD3 only when all CD1 exercises are

UPPER EXTREMITY INJURIES
CONDITIONING DRILLS 1-3

1. Repetitive overhead arm exercises performed with hands on hips or in pain-free ranges of motion.
2. Prone Row performed with arms at sides or maintained in "count 1" position.
3. Push-Ups performed in six-point position until repetitions and cadence achieved. May be performed on fists to avoid wrist extension.
4. Sit-Ups performed with hands crossed over

BACK INJURIES
CONDITIONING DRILLS 1-3

1. Bending or twisting exercises performed in pain-free ranges of motion.
2. Maintain stable spine with lunging, squatting, and Push-Ups. Push-Ups in six point position, as needed.
3. Progress to jumping exercises when all other exercises within CD are pain-free. Perform initially by rising up on toes, then begin jumping with minimal

Figure 3. PTRP prof le courtesy of Moncrief Army Community Hospital

and initiated a plan of care (Table 1) to continue cycling and introduce clinic visits 3 times per week until PVT S was approved for convalescent leave and then upon her return, until discharged by the therapist. PVT S began her first 5 therapy sessions performing isolated hip abduction exercises in side-lying on a plinth. PVT S was taught to tighten her quadriceps on the top leg and lift it 8 to 10 inches from the mat. Her second exercise was hip adduction in side-lying, in which PVT S bent her top hip into flexion in front of the bottom leg, and while maintaining her hip in neutral and contraction of the bottom leg's quadriceps muscle, lifted the leg 8 to 10 inches off the mat. The last exercise was the "clam shell;" as before, PVT S lay on her side, hips at 45° and knees at 90°. Keeping her heels together, she was shown how to lift the top leg by turning out at the hip while maintaining her pelvis perpendicular preventing her body from rotating backwards. PVT S performed all of these exercises bilaterally, 4 sets of 20 repetitions, holding the leg at the top of the motion for 3 seconds. At the end of each session, she was given ice for her hip/pubic region for 10 minutes. After 3 weeks, PVT S was granted 30 days of convalescent leave and instructed to continue these exercises and crutch gait weight-bearing-as-tolerated until she returned to the base.

She returned to clinic in the 9th week postinjury and was re-evaluated. The next 2 weeks, PVT S was progressed to higher level activities in clinic 5 times per week, with her previous exercises becoming her HEP. The cycling was continued due to her continued antalgic gait. She began "4-way SLR" in standing; while performing a quad set, PVT S brought her hip into flexion, extension, abduction, and adduction. Her second new exercise was the "monster walk;" also performed in standing, green Thera-Band® was tied around her ankles. PVT S was told to perform a mini squat, abduct her leading hip against the resistance of the band, and then bring the other leg to it, keeping some resistance in the band at all times. The final new exercise was a "double leg sit to stand with ball." She sat on a chair of normal height, squeezed a small playground ball between her knees and rose to standing. All of these exercises were performed in 4 sets of 15 repetitions bilaterally.

At the conclusion of week 10, PVT S was re-evaluated again. At this time she had shown improvements in gait and a reduction in pain and was able to perform deep squats, single leg hops, and the triple hop drills without any pain. She was given permission to begin the walk-to-run track (WRT) program. In-clinic therapy was discontinued and PVT S was encouraged to keep up with her HEP and ice. She returned to clinic 2 days later with increased pain, following an attempt at the WRT, so 3-point crutch gait and repeat x-rays were ordered, which were negative for new fracture. The WRT was stopped and PVT S was brought back into the clinic for the rest of the week to perform the exercises mentioned above. She came to clinic at the start of week 12 with no complaints of pain and a nonantalgic gait. Her in-clinic program was reinstated 3 days per week, and the advanced pool therapy program was initiated. Aquatic therapy was held twice a week for

Table 1. Interventions for PVT S during each Week of Physical Therapy

Week	WB status	HEP	in-clinic	pool	WRT
1-3	WBAT on left LE		isolated hip abduction and adduction, clam shells, ice		
4-8	continue as above	isolated hip abduction and adduction, clam shells, ice			
9-10	D/C crutches	continue as above	4-way SLR, monster walk, double leg sit to stand with ball squeeze		
11 (days 1, 2)		continue as above	D/C in-clinic therapy		Begin WRT:
11 (days 3-7)	3 point crutch gait on left LE, 25% weight-bearing	pt to be seen in clinic	isolated hip abduction and adduction, clam shells, ice		D/C WRT due to increased pain
12-13	D/C crutches	isolated hip abduction and adduction, clam shells, ice	4-way SLR, monster walk, double leg sit to stand with ball squeeze	advanced pool: LE stretching, running, jumping, hopping, cutting drills in all directions	
14		continue as above	continue as above	continue as above	
15		continue as above	continue as above	continue as above	on treadmill in clinic walk/jog ¼ mile increments up to 1 mi.
16		continue as above	continue as above	continue as above	on treadmill in clinic walk/jog ¼ mile increments up to 1.5 mi.
17		continue as above	D/C in-clinic therapy	continue as above	on outdoor WRT walk/jog ¼ mi increments up to 2 mi.
18		continue as above		continue as above	on outdoor WRT walk ¼ / jog ½ increments up to 2 mi.
19		continue as above		continue as above	on outdoor WRT walk ¼ / jog ¾ increments up to 2 mi.
20		continue as above	continue as above	continue as above	on outdoor WRT walk ¼ / jog 1 mi. increments up to 2.5 mi, increase running time, take APFT

an hour and consisted of stretching, running, jumping, and cutting in all directions against the resistance of the water. This plan of care continued through week 14. At her 15th week re-evaluation, the decision was made to attempt the WRT program again, this time on the treadmill in the clinic.

PVT S returned to clinic 17 weeks after her injury able to tolerate the treadmill without any complaint. The therapist discontinued her in-clinic therapy and PVT S's new short-term goal was to tolerate the WRT on the outdoor track. PVT S increased her running ability through the walk-run track program over her last 4 weeks of PT (Table 1) with no increase in symptoms and was cleared to attempt an APFT. She successfully met the scoring requirement and was returned to training after 20 weeks in physical therapy.

Outcomes

PVT was seen for a total of 67 therapy sessions (35 in-clinic, 18 aquatic therapy sessions, and 14 WRT treatments). Verbal pain rating, radiologic findings, HOOS/Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and SF-12 scores were measured at her initial evaluation and again at 9 and 20 weeks postinjury (Table 2). The WOMAC is included in the HOOS in its complete format and as such, WOMAC scores can be calculated. The WOMAC has been shown to have moderate to high reliability in all 3 subscales (ICC=0.88-0.93 pain, 0.73-0.96 stiffness, 0.88-0.94 physical function) and moderate construct validity (r=0.74).[18] The WOMAC is scored like the HOOS; 0 indicative of extreme problems and 100 signifying no problems. PVT S's pain score improved from 60 to 100, her stiffness improved from 25 to 100 and her physical function improved from 39.71 to 100. The minimally clinically important difference has been shown to be 21.1,[19] suggesting her changes from the beginning to the end of treatment are clinically significant. The SF-12 has a population mean score of 50 and a standard deviation of 10, meaning large differences in scores can not be based on chance alone. A review of the literature produced a minimal important difference of 6.8 for the SF-12 PC,[17] but no established data exists for the MCS. Thus, PVT S's change in her PCS from 35.64 at baseline to 58.08 upon completion of therapy, a difference of 22.44 points is clinically significant, but the meaningfulness of her MCS change cannot be determined. PVT S experienced a 100% decrease in her reported pain on the NRS (from 8 to 0). According to research by Cepeda et al, a 20% decrease on the numeric rating scale for pain, independent of initial severity, is considered to be a meaningful change.[20] Lastly, radiologic findings describe healing fractures of her left IPR and SPR (Figure 4), with appropriate bone callous formation and normal bony alignment after her 20 weeks of rehabilitation and PVT S was able to reach her goal of returning to training.

DISCUSSION

The purpose of this case report was to highlight Ft. Jackson's hip pain clinical practice guidelines in the physical therapy evaluation of a soldier-in-training with hip pain by describing outcomes for a patient with pelvic stress fractures. Previous research describes the risk factors for pelvic stress fractures[2,3,8] and suggests, at least in a military environment, methods for prevention of injuries to the bone at the pubic rami.[9,12] Basic combat training units are doing a better job of placing shorter recruits at the front of marching formations and using more physically fit recruits as road guards. PVT S sustained her injury during BCT and was subsequently assigned to PTRP. The PTRP is run in the Initial Entry Training environment and as such, physical training and military work duties (kitchen, warehouse, clothing issue, cleaning, and clerical assignments) are to be performed daily in addition to therapy. Soldiers are still required to report for formations, walk to the dining facility, and engage in activities throughout the day to the limits imposed by their profile. There is little down time for complete rest. It is for this reason that the hip algorithm is used to prevent soldiers with suspected femoral neck stress fracture from completing the fracture. In addition, the progression in the treatment plan is monitored closely in order to allow a soldier to complete their daily activities and to increase the physicality of the work to be performed.

A limitation to this case report is that the author did not follow-up beyond the completion of this episode of physical therapy to ensure no further injuries occurred when PVT S was returned to training. Another is that this manuscript only details the rehabilitation of one soldier-in-training. Differences may occur in pain and disability between individuals and so it may be important to study groups of recruits with pelvic stress fractures as opposed to just one. Lastly, although the hip algorithm

Table 2. Outcome Measures

Outcome Measure	Initial	Week 9	Week 20
Current Pain Level (NRS)	8	7	0
Radiologic findings	Vertically oriented fracture through lateral left SPR with periosteal elevation. Obliquely oriented lucency medial left IPR with periosteal elevation	Healing fractures of left SPR and IPR with anatomic alignment	Healing fractures of left SPR and IPR. Callous formation is noted and bony alignment is normal
SF-12: PCS	35.64	43.89	58.08
SF-12: MCS	52.14	59.03	55.93
HOOS Pain	45	80	100
HOOS Symptoms	35	60	95
HOOS ADL	39.7	85.3	100
HOOS Sports and recreation	31.25	75	100
HOOS Quality of Life	43.75	68.75	100
WOMAC Pain	60	85	100
WOMAC Stiffness	25	75	100
WOMAC Function	43.75	68.75	100

Figure 4. Follow-up x-rays 18 weeks from initial radiograph showing healing callous formation and bony alignment.

was important in the ruling out of a femoral neck stress fracture, it had no further bearing on PVT S's treatment as she had pelvic stress fractures.

FUTURE WORK

Further research is needed in order to determine if there is an outcome measure that may better predict when someone with a pelvic stress fracture is ready to begin a walk-run progression program, both in a military environment and in the everyday athlete. Future studies could also be performed to test the reliability/validity of the HOOS instrument in a younger population; 18 to 35 instead of its intended 42 to 89 year old audience. Finally, research is needed to validate the clinical practice guidelines for hip pain. The author suggests expanding this algorithm to the other bases providing Initial Entry Training to the Army to identify femoral neck stress fractures and prevent them from becoming completed, thus requiring surgical fixation.

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Paris Distinguished Service Award Lecture

Jan K. Richardson, PT, PhD, OCS

Presented at the Combined Sections Meeting in Las Vegas, NV February 2009

Let me begin by thanking the Orthopaedic Section, and the Awards Committee for selecting me for the 2009 Paris Distinguished Service Award. Additionally, I want to thank Dr. Annette Iglarsh who orchestrated the submission of my nomination packet and Drs. Pam Duffy, Jonathan Cooperman, Mike Cibulka, and Corrie Odom for writing letters of support. And as always my great thanks to the Section staff especially, Terri and Tara, for all of their assistance.

It is indeed a great honor and privilege to receive this award especially this year as the Orthopaedic Section is celebrating its 35th anniversary. As all of you know very well, those of us who are selected for these distinctions do not get here alone. Therefore, I would be amiss if I do not also recognize my family who offers me unconditional love and support at all times. My husband and the APTA's 23rd President Bob Richardson, who is my mentor, and soul mate; my son, Ryan, who was born 3 months premature and is now 6'2", 230 lbs… ; my beloved daughter Kara, who many of you saw dance as a 10 year old during my first APTA presidential address and is now an intelligent young woman getting ready to apply to medical school; and Mrs. Nancy Voneida, who is my best friend, confidant, and who keeps my social and travel schedule meticulously organized. Will all of you please stand and be recognized for your energy, passion, and commitment to our profession and me?

It is a great privilege to be able to share these thoughts with you on this the 35th anniversary of the Section. I was President of the Orthopaedic Section when we first decided to celebrate these milestones and we organized the 15th anniversary event. It was a time of reflection and joyous remembrance for those who led the pathway to forming the Section in 1974 and who helped to grow it to where it was in 1989. The first President of the Section was Dr. Stanley Paris who this award is named in honor of and whom I have had the pleasure to know and work with over the last 25 years. We have much to thank Stanley for including his visionary leadership, tenacity, and controversial challenges to practice and education.

It was in the late 1980s when I was President that the Section BOD decided to develop award categories to recognize the many contributions of our past luminaries in service, education, and research. In addition to recognizing Stanley with a service award for the formation of the Section, we established the James A. Gould Excellence in Teaching Orthopaedic Physical Therapy Award. Also, Dr. Annette Iglarsh and I organized and implemented the 'Black Tie and Roses' event to recognize Dr. Steven J. Rose for his efforts to move research into the forefront of musculoskeletal practice. The 'Black Tie and Roses' went onto be the first of many annual APTA events that spearheaded interest and support for the important integration of scientific and clinical research to advance practice as we know it today.

The Orthopaedic Section has always been the largest of the APTA components and has been well poised to provide leadership throughout its history within the association. It is at this time of celebration of the 35th anniversary that it is most apropos that we revisit the many contributions of this Section to the advancement of the profession of physical therapy.

A 35 FIVE YEAR LEGACY OF LEADERSHIP

The Orthopaedic Section was first developed with the intent of promoting manual therapy in our profession. The founders believed that the use of our hands were essential to quality care and patient outcomes.

As the Section grew, the vision of orthopaedics expanded from manual therapy to the broader spectrum of musculoskeletal care across the life span. Practice which was always the cornerstone of the mission of the Section was solidified and the component of education began to serve as an equally viable objective. By the time that the Section was in its second decade of growth, continuing education was in the limelight and the Section recognized that producing quality educational courses could be a significant source of revenue. It was in the 1980s that competition for educational seminars became heated and controversial. Many entrepreneurial practitioners were making a very good livelihood by conducting CEU courses, thereby increasing their visibility. Both the APTA and the Section began to evaluate and assess the quality of content and pedagogy through policies from the HOD and BOD.

Concurrent to this momentous movement toward CEU courses, the Section had completed the orthopaedic specialty certification and examination and the Section developed and implemented its week long review course. This course became extremely successful and was a catalyst that stimulated the Section to grow its operational budget from approximately $660,000 to over $1.2 million. This course secured the Section's credibility as a recognized provider of quality continuing education and the OCS exam catapulted to the forefront in the number of ABPTS board certified specialists. The title still remains today as there are 4,979 OCS specialists in the country, followed by 927 Geriatric Certified Specialists.

As the 1980s came to a close, the Section began to seriously look at the third piece of the tripartite--research. The Section developed a very active Research Committee and also became a major donor to the Foundation for Physical Therapy. Research was now viewed as importantly as practice, as the profession concurrently recognized the need to establish scientific and clinical evidence.

Parallel with our major gifts of a half million dollars to the Foundation for Physical Therapy, the Section issued a challenge to the APTA on behalf of minority scholarships. The APTA Cultural Diversity Department had attempted to raise scholarship funds for several years, only to have approximately $500 available for student education. The Orthopaedic Section gave $2,500 to initiate a kick off challenge and pledged an additional $5,000 if the APTA could raise $10,000 in 12 months. Taking

this leadership role, members launched a rigorous effort to raise the $10,000 needed to meet the challenge. At the end of the 12 months, the APTA had raised over $16,000, more than enough to secure the additional $5,000 from our Section. Today the minority scholarships available are $5,000 per recipient and approximately 5 to 6 recipients are selected each year. I am very proud to have been Section President when that initial challenge was made and equally proud to boast that in the past 4 years. Duke DPT minority students have been selected to receive 2 to 4 of these scholarships annually.

Lastly, but equally as important, was our extensive leadership role in Government Affairs. We as a Section have always been advocates for the advancement of practice through legislative initiatives. Reimbursement on behalf of our patients have been the hallmark of our efforts, in concert with our ability to manipulate, treat performing artists and animals, diagnose, and practice without referral. We have helped to lead the March on Capitol Hill to secure the repeal of the Medicare cap and in our 1999 HOD to ensure that mobilization/manipulation and sharp debridement were solely within the scope of practice for the physical therapist. The initiatives and vision of the Orthopaedic Section may have been led by its presidents and it officers, but it was won by its members.

THE FUTURE

We have had many successes in the past but that does not ensure victories for the future. Today we are more than 16,000 members strong with a budget of over $1.6 million.

We have elevated our profession to that of DPT and will need to continue to ascribe to greater roles and responsibilities in the future by elevating our care, advocating for our patients, and proving our value to consumers and health care systems through research.

We must strive to constantly grow and renew ourselves as a profession. In 1921, Mary McMillan cared for the war injured. Today we as physical therapists are revitalizing this historic role of our practice, but we need to look forward to what we can and should be. We need to recreate ourselves lest others will decide for us what our role might be.

I see that we can fluidly navigate from practice to education to research, all within the context of musculoskeletal scope of care. The depth and breadth of our preparation has evolved to integrate a robust research agenda with enhanced clinical science that can transcend our practice into venues that have not traditionally been ours. Our roles and contributions will be paramount in genomics, oncology, chronic disease, and global health. Using telehealth and informatics will ensure that consumers have access to our nonpharmacological interventions.

CHALLENGE

I challenge us to educate our future practitioners as clinician/scientists. Make pathways into the world of genomics as it will unlock many of the secrets to disease and prevention. We must move boldly to expand and solidify our body of knowledge for the well being of future generations.

Our achievements will be measured by the conflicts we avert, the integrity we possess, and the care we extend to others in need around the world. I stated in my 2000 presidential address that, "our profession must learn to react to external and internal forces, not with unsteadiness and concern but with the flexibility and adeptness that will require patience and time. Patience that will evolve out of our confidence in who we are, not out of compromise with those with whom we negotiate in health care and in time to evolve to the highest level of provider based on the consistent quality of care and standards of practice that we will demand of ourselves."

The Orthopaedic Section has been a powerful, driving force for the past 35 years escorted by leaders who did not shrink from controversy or challenge, but who welcomed what were threats and turned these into accomplishments! Let us celebrate the past and now look forward to the future. Knowing that we will meet the future with the vision, conviction, and inspiration that what we do, we do on behalf of our beloved profession, our Orthopaedic Section, and the patients that we serve.

CALL FOR CANDIDATES

Dear Orthopaedic Section Members:
The Orthopaedic Section wants you to know of two positions available for service within the Section opening up in February, 2010. If you wish to nominate yourself or someone else, please contact the Nominating Committee Chair, G. Kelley Fitzgerald, at kfitzger@pitt.edu. **Deadline for nominations: September 1, 2009**. Elections will be conducted during the month of November.

Open Section Offices:

- President: Nominations are now being accepted for election to a three (3) year term beginning at the close of the Orthopaedic Section Business Meeting at CSM 2010.
- Nominating Committee Member: Nominations are now being accepted for election to a three (3) year term beginning at the close of the Orthopaedic Section Business Meeting at CSM 2010.

Be sure to visit http://www.orthopt.org/policies_and_covers_mbr.php for more information about the positions open for election!

ORTHOPAEDIC SECTION, APTA, INC.
CSM BOARD OF DIRECTORS MEETING MINUTES
February 10 and 12, 2009

James Irrgang, President, called a regular meeting of the Board of Directors of the Orthopaedic Section, APTA, Inc. to order at 6:00 PM Pacif c Time on Tuesday, February 10, 2009.

Present:
James Irrgang, President
Tom McPoil, Vice President
Steve Clark, Treasurer
Bill O'Grady, Director
Ellen Hamilton, Director
Bob Rowe, Practice Chair
Joe Donnelly, Practice Vice Chair
Lori Michener, Research Chair
Beth Jones, Education Chair
James Spencer, Membership Chair
Chris Hughes, OP/ISC Editor
Eric Robertson, PR/Marketing Chair
Paul Howard, Nominating Chair
Dee Daley, OHSIG Education Chair
Steve Paulseth, FASIG President
Leigh Roberts, PASIG President
John Garizone, PMSIG President
Amie Hesbach, ARSIG President
Carrie Adamson, ARSIG Vice President
Joe Godges, ICF Coordinator
Tara Jo Manal, Residency and Fellowship Coordinator
JW Mathison, ICF Wiki Presentation
Aimee Klein, APTA Board Liaison
Tara Fredrickson, Executive Associate
Terri DeFlorian, Executive Director

Absent:
Margot Miller, OHSIG President

The January 6, 2009 Board of Directors Conference Call Meeting minutes were approved as printed.

The meeting agenda was approved with changes.

Following are the Dates and Times of the Spring Board of Directors Conference Calls
- **March 10, 2009 12:30 – 1:30 PM EST**
- **April 14, 2009 12:30 – 1:30 PM EST**
- **May 12, 2009 12:30 – 1:30 PM EST**

MOTION 1
James Spencer, Membership Committee Chair, moved that the Orthopaedic Section Board of Directors charge the Membership Committee to develop a face book page on the internet to promote discussion of Orthopaedic Section activities. The Board requested that a disclaimer be developed by the Section attorney to be included on the Web site. ADOPTED (unanimous)
Fiscal Implication: None

MOTION 2
Chris Hughes, ISC Editor, moved that the Orthopaedic Section Board of Directors approve the following proposed authors and topics for the 2011 ISCs -

1. Current Concepts for Orthopaedic Physical Therapy, 3rd Edition (12 monographs)
   - *Clinical Reasoning and Evidence-based Practice*
   - *The Cervical Spine*
   - *The Thoracic Spine*
   - *The Shoulder*
   - *The Elbow*
   - *The Wrist and Hand*
   - *The Lumbar Spine*
   - *The Pelvis and Sacroiliac Joint*
   - *The Hip*
   - *The Knee*
   - *The Foot and Ankle*
   - *The Temporomandibular Joint*

   Authors to be determined.
   ADOPTED (unanimous)

2. Cervical and Thoracic Pain: Evidence for Effectiveness of Physical Therapy (6 monographs)
   - *Origins of Cervical Pain*
   - *Origins of Thoracic Pain*
   - *Best Practice for Evaluation and Treatment of the Cervical Spine*
   - *Best Practice for Evaluation and Treatment of the Thoracic Spine*
   - *Postsurgical Rehabilitation for the Cervical Spine*
   - *Postsurgical Rehabilitation for the Thoracic Spine*
   - *Authors to be determined.*

   ADOPTED (unanimous)
   Fiscal Implication: None

MOTION 3
Eric Robertson, Public Relations/Marketing Chair, moved that the Orthopaedic Section Board of Directors appoint a Board Liaison to the Public Relations/Marketing Committee. ADOPTED (unanimous)
Fiscal Implication: None

MOTION 4
Eric Robertson, Public Relations/Marketing Chair, moved that the Orthopaedic Section Board of Directors approve a photo contest for the purpose of creating a database of photographs reflecting orthopaedic physical therapy practice for use on the Web site as well as in PR and marketing efforts. The contest would be open to Orthopaedic Section members only. ADOPTED (unanimous)
Fiscal Implication: Prizes to be awarded to the top 3 – member pin, ISC, etc.

MOTION 5
Eric Robertson, Public Relations/Marketing Chair, moved that the

Orthopaedic Section Board of Directors approve the development of a blog on the homepage of the Section's Web site. TABLED until March Board Conference Call Meeting. The Board charged Eric Robertson and Tara Fredrickson to have a conference call with the Section's web developer to discuss logistical and fiscal implications of this prior to the March conference call.
Fiscal Implication: Preliminary estimates are $150 plus one-time fee of $2,500.

MOTION 6

Steve Paulseth, FASIG President, moved that the Orthopaedic Section Board of Directors approve the use of FASIG encumbered funds to fund research grants related to the foot and ankle. TABLED until March Conference Call after discussion takes place with FASIG members.
Fiscal Implication: To be determined.

MOTION 7

Leigh Roberts, PASIG President, moved that the Orthopaedic Section Board of Directors explore the expense of creating a database for SIGs by April 10, 2009. ADOPTED (unanimous)
Fiscal Implication: To Be Determined

MOTION 8

Leigh Roberts, PASIG President, moved that the Orthopaedic Section Board of Directors charge the Section to clarify the procedure for posting and charging non-members for downloadable information on the PASIG Web site to the PASIG, by March 15, 2009. ADOPTED (unanimous)
Fiscal Implication: To Be Determined – fees to come out of non-member charge. Anything left over goes to PASIG encumbered fund.

MOTION 9

Leigh Roberts, PASIG President, moved that the Orthopaedic Section Board of Directors charge the PASIG with writing a Figure Skating 3-monograph Independent Study Course for late 2010. TABLED to a future Board Conference Call Meeting
Fiscal Implication: A proposal for a 6 monograph course to be offered in early 2011 will be brought to the ISC Advisory Panel who will bring it to the Board for approval. Split of profit will follow the existing policy.

Joe Godges, ICF Coordinator, discussed submitting guidelines to the national clearinghouse. Joe will make a recommendation to the Finance Committee by their August meeting of an individual to handle this.

MOTION 10

Tara Jo Manal, Residency Coordinator, moved that the Orthopaedic Section Board of Directors accept the following proposal regarding residency curriculum offerings ~

Orthopedic Residency Curriculum Of erings

	COURSE TITLE	MEMBER COST	SINGLE RESIDENCY
14.2	Clinical Applications for Orthopaedic Basic Science	$160.00	$130.00
15.2	Postoperative Management of Orthopaedic Surgery	$250.00	$200.00
16.1	Pharmacology	$250.00	$200.00
16.2	Current Concepts of Orthopaedic Physical Therapy	$475.00	$400.00
17.1	Diagnostic Imaging	$150.00	$120.00
	Research Principles for Clinical Therapists (CD)	$150.00	$120.00
	Total	$1435.00	$1170.00
	Package discount/resident purchase of full curriculum		$1000.00

The residency discount is for residents enrolled in a credentialed or developing residency or fellowship program in orthopaedic physical therapy or related fellowship area. Developing programs will have 2 years to be eligible for the discounted fees at which time they must demonstrate proof of application for APTA credentialing. A third year will be available during the credentialing process as needed. After the 3-year grace period, the prices will revert to member fees only if the residents or fellows are members and remain at that rate until the program is fully credentialed.

The single course and full curriculum purchase price include multiple choice examinations to be graded and exam results provided to the resident and residency director. Criteria for "passing" are at the discretion of the residency director. Supplemental material for residency faculty and residents are provided for each component of the curriculum. Use and inclusion of the supplemental check lists in the residency curriculum are at the discretion of the residency program.
WITHDRAWN to pursue a more cost effective option.

MOTION 11

Tom McPoil, Vice President, moved that the Orthopaedic Section investigate options for the development of a "member-only" site for ISCs that would include power point presentations along with audiovisuals and report back on the April Board Conference Call. ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia – absent)
Fiscal Implication: To Be Determined

MOTION 12

Beth Jones, Education Chair, moved that the Orthopaedic Section Board of Directors pay the Primary Care and Knee EIG Chairs as speakers only and not as moderators. ADOPTED (James - Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia – absent)
Fiscal Implication: Speaker rate according to the policy.

Paying speakers and moderators when programs are co-sponsored by other Sections as well as other sources that might be reimbursing the speakers was discussed. Tom McPoil will review current policies and work on recommendations to clarify how these reimbursements will be handled.

MOTION 13

Doug White, Musculoskeletal Imaging EIG Chair, moved that the Orthopaedic Section Board of Directors approve funding a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of imaging in physical therapist practice for the Musculoskeletal Imaging EIG. FAILED (James – No, Tom – No, Steve – No, Bill – No, Kornelia – absent)
Fiscal Implication: Not to exceed $500.

The Board indicated that SWOT analyses are only funded by the Section for SIGs. The Imaging EIG has the option to petition the Board of Directors to become a SIG following two years after formation and meeting all the criteria for SIG formation set forth in the SIG/EIG Policies and Rules of Order.

MOTION 14

Tom McPoil, Vice President, moved that the Orthopaedic Section Board of Directors approve Kim Salyer's, PT, as the Chair of the PTA EIG for a 3 year term, 2008-2011. ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia - absent)
Fiscal Implication: None

MOTION 15

Lori Michener, Research Chair, moved that the Orthopaedic Section Board of Directors approve the following 3 research grants for 2009 -
Fritz et al ($24,900), Cleland et al ($25,000), Dailey et al ($25,000). ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia - absent)

Lori Michener, Research Chair, discussed the possibility of having 2 levels of funding for research grants to include new investigators. Lori will bring forth a motion for the March Board of Directors meeting.

Lori Michener, Research Chair, stated the Research Committee has a vacancy in the Vice Chair position now that Kornelia Kulig has been elected Director to the Board. There are also 3 other Committee Members who will rotate off the Committee in 2009. Lori will begin contacting individuals who might be interested in serving on the Research Committee.

MOTION 16

Robert Rowe, Practice Chair, moved that the Orthopaedic Section Board of Directors appoint Dave Morrisette, PT, PhD, OCS, ATC, FAAOMPT as a new member to the Practice Committee. His term would be from CSM 2009 – 2011. ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia - absent)
Fiscal Implication: None

MOTION 17

Robert Rowe, Practice Chair, moved that the Orthopaedic Section Board of Directors re-appoint Ken Olson, PT, to a second term on the Practice Committee (2009 – 2011). ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia - absent)
Fiscal Implication: None

MOTION 18

Steve Clark, Treasurer, moved that the Orthopaedic Section Board of Directors re-appoint Tara Jo Manal, PT, DPT, OCS, SCS to a second term on the Finance Committee (2009-2011). ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia – absent)
Fiscal Implication: None

Tara Fredrickson, Executive Associate, discussed additional cost of web component associated with developing a second database for the SIGs. The cost was estimated at between $20-22,000. This will be further investigated and more information brought back to the March Board Conference Call Meeting.

MOTION 19

Tom McPoil, Vice President, moved that the Orthopaedic Section Board of Directors submit James Spencer's name to APTA for the Emerging Leader Award. Deadline is May 15, 2009. ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia – absent)
Fiscal Implication: None

Steve Clark, Treasurer, reported the following regarding the APTA Monthly Dues Payment Program -
Given the cash flow implications on components and national, the opportunity costs of placing resources with this program instead of other programs, current technology and human resource implications, and the lack of evidence of positive impact on membership numbers, the Advisory Panel opposes Association resources being directed to a monthly dues payment program at this time. The Advisory Panel was aware of RC 16-08 Monthly Dues Payment Program which directs APTA to "…develop options for a monthly dues payment program that could be implemented by the beginning of the first dues cycle of 2010." In addition, the Advisory Panel reviewed the report from the ad hoc monthly dues payment group led by Ira Gorman. From the options in the group's report, the Advisory Panel recommends only two options: pursuing an annual auto renewal payment process and exploring options outside of APTA infrastructure to assist members with their payment plan needs.

James Irrgang, President, reported on the orthopaedic physical therapy related legislative issues in New Jersey, Oregon, California, Wyoming, and New Hampshire. The Section's Practice Committee will monitor happenings in these states and report back to the Board of Directors as appropriate.

MOTION 20

James Irrgang, President, moved that the Orthopaedic Section Board of Directors consider providing a matching grant to the California Chapter for $2,500, that if necessary, would be subtracted from the Section's research grant budget in 2009. ADOPTED (James – Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia – absent)
Fiscal Implication: $2,500

MOTION 21

Tom McPoil, Vice President, moved that the Orthopaedic Section Board of Directors charge the Practice Committee to develop an application process/proposal for funding criteria for advocacy to include a cap. ADOPTED (James –Yes, Tom – Yes, Steve – Yes, Bill – Yes, Kornelia - absent)
Fiscal Implication: The cap to be determined.

The Section's Practice Committee will monitor these issues in these states and report back to the Board of Directors as appropriate.

The Board of Directors discussed and decided not to put forth recommendations for the Federal Government Affairs Leadership Award and Public Service Award for 2009.

The Board of Directors discussed the possibility of having a face to face meeting at Annual Conference in Baltimore, MD in June with those Board members who will be attending for other reasons. Those not in attendance could attend via conference call. This will be addressed on a future Board Conference Call**.**

James Irrgang and Tom McPoil reported that the *JOSPT* Members meeting was well attended by both the Orthopaedic and Sports Sections and that both Sections indicated to *JOSPT* President, David Greathouse that they were pleased with the current *JOSPT* contract and wanted to extend the contract past 2010.

The following items were deferred to the March Board of Directors Conference Call Meeting -

- Membership Survey Results – James Irrgang, President
  Advocacy – Bob Rowe
  CSM Platforms – Lori Michener
  CSM Programming – Beth Jones
  Emerging Practice Issues – Bob Rowe
  New Section Meeting – Beth Jones/Tom McPoil
  Residency/Fellowship – Tara Manal
- Discussion of House of Delegate Motion to change existing REIMBURSEMENT FOR PHYSICAL THERAPY SERVICES HOD P06-01-12-15 – Bill O'Grady, Director
- Update on meeting with Animal SIG and APTA – James Irrgang, President
- Request by Sports Section to do a joint conference between Orthopaedic and Sports Sections – Tom McPoil, Vice President
- FSBPT Issue – James Irrgang, President
- PASS Summit – James Irrgang, President
- Orthopaedic Section sponsor an Orthopaedic Clinical Graham Session – Bill O'Grady, Director
  Meeting on branding, reimbursement, use of supportive personnel, POPTS, and collaboration with other professions. Clinicians, researchers and academicians meet to discuss best practices, evidence-based practice, clinical prediction rules and clinical decision making, and its role in patient treatment.
- Board of Director Liaison Assignments – James Irrgang, President
- Sponsoring a student to attend the Federal Government Affairs Meeting in DC – James Irrgang, President
- Strategic Plan Review – James Irrgang, President

The meeting adjourned at 11:00 AM Pacific Time, Thursday, February 12
Submitted by Terri DeFlorian, Executive Director

ORTHOPAEDIC SECTION, APTA, INC.
CSM 2009 ANNUAL MEMBERSHIP MEETING MINUTES
LAS VEGAS, NEVADA
FEBRUARY 11, 2009

I. CALL TO ORDER AND WELCOME

A. James Irrgang, PT, PhD, ATC, President, called the meeting to order at 6:30 PM.

B. The agenda was approved as printed.

C. The Annual Membership Meeting minutes from CSM in Nashville, Tennessee on February 8, 2008 were approved as printed in Volume 20:2:08 issue of *Orthopaedic Physical Therapy Practice.*

D. Orthopaedic Section Election Results – Nominating Committee Chair, Paul Howard, PT, PhD, OCS
For the Fall 2008 election there were 771 ballots cast. The number of valid ballots was 768 and the number of invalid ballots was 3. The following positions were elected: Director, Kornelia Kulig, PT, PhD and Nominating Committee Member, Joshua Cleland, PT, DPT, OCS, FAAOMPT. The 3 bylaw amendments were also approved.

The deadline for accepting nominations for the Fall 2009 election is September 1, 2009.

II. INVITED GUESTS

A. *JOSPT* President, David Greathouse, PT, PhD, ECS, FAPTA, presented a summary of the *JOSPT* including the number of submissions and papers accepted for publication.

B. Tim Schall, PT-PAC Chairman, gave an update on the PT-PAC fund raising efforts.

C. Dan Riddle, PT, PhD, FAPTA, Foundation for Physical Therapy Board of Trustees, presented an update on their Destination: Research Excellence Campaign.

III. FINANCE REPORT

A brief synopsis of the Section's Finances is printed on page 38.

IV. SECTION INITIATIVES

A. James Irrgang, President
The Section sent a survey to all members in 2008 to glean vital information on publications, education, residency and fellowships, advocacy, and leadership issues. Another survey was sent to get information on the Section's research agenda. The results of both surveys have been received and will be used to guide the Section leadership in developing their next 3 year strategic plan in October 2009.

B. Joe Godges, ICF Coordinator
To date the ICF workgroups have completed guidelines for heel pain – plantar fasciitis and neck pain, which were published in a 2008 issue of *JOSPT*. The workgroups are in the process of finalizing guidelines for the following areas – shoulder, low back pain, hip fractures, and hip osteoarthritis. All guidelines, including a project summary, are posted on the Orthopaedic Section Web site. As new guidelines are developed, they will be added to the list.

D. Tara Jo Manal, Residency and Fellowship Education Coordinator
The Residency and Fellowship Committee consists of 3 subcommittees each of which reports to the Residency Oversight Committee. The subcommittees are Didactic Training, Residency and Fellowship Programming, and Residency and Fellowship Growth and Marketing. The goal of the subcommittees will be to identify available and needed resources to support programs with didactic resources; develop Residency and Fellowship programming; and to develop a plan to effectively grow and market programs.

V. RECOGNITION OF BOARD OF DIRECTORS

The following outgoing officers were recognized for their service to the Section as their terms end at the close of the 2009 CSM Membership Meeting –

- Ellen Hamilton, PT, OCS - Director
- Paul Howard, PT, PhD, OCS – Nominating Committee Chair

The following incoming officers were recognized –

- Kornelia Kulig, PT, PhD – Director
- G. Kelly Fitzgerald, PT, PhD, OCS – Nominating Committee Chair

VI. NEW BUSINESS MOTIONS

No new business was brought forth from the floor.

Board of Director, Committee Chair, and SIG reports are located on the Orthopaedic Section Web site (www.orthopt.org).

ADJOURNMENT 7:30 PM

AAOMPT 2009 CALL FOR ABSTRACTS

The 15th Annual Conference of the American Academy of Orthopaedic Manual Physical Therapists will be held October 14-18 in Arlington, VA. Interested individuals are invited to submit abstracts for presentation in slide or poster format. The AAOMPT research committee chairman must receive the abstract by June 1, 2009. Abstracts received after this date will be returned. You will be notified of the acceptance/rejection of your abstract in July. If you have any questions you can contact the research committee chairman, Jean-Michel Brismée at jm.brismee@ttuhsc.edu. For additional organization information, see our website, www.aaompt.org.

CONTENT. The Academy is soliciting all avenues of research inquiry from case-report and case-series up to clinical trials. The Academy is particularly interested in research evaluating intervention strategies including manipulative techniques using randomized-controlled clinical trials. The abstract should include 1) Purpose; 2) Subjects; 3) Methods; 4) Results; 5) Conclusions; 6) Clinical Relevance.

PUBLICATION. The accepted abstracts will be published in The Journal of Manual & Manipulative Therapy, which has readership in over 40 countries.

SUBMISSION FORMAT. The format for the submitted abstracts is as follows:
The abstract must be submitted by email in MS Word format to the research committee chairman (jm.brismee@ttuhsc.edu) The abstract should fit on one page with a one-inch margin all around and be no longer than 300 words in length. The text should be typed as one continuous paragraph. Type the title of the research in ALL CAPS at the top of the page followed by the authors' names. Immediately following the names, type the institution, city, and state where the research was done. Please include a current email address where you can be contacted.

PRESENTATION. The presentation of the accepted research will be in either a platform or poster session. The slide session will be limited to 8 minutes followed by a 2-minute questions/discussion; this session will be primarily for research reports and randomized clinical trials. The poster session will include a viewing and question answer period and will be primarily for case report/series.

PRESENTATION AWARDS. The platform and poster presentations deemed of the highest quality of those presented at the Annual Conference will be awarded the AAOMPT Excellence in Research Award (platform), and the AAOMPT Outstanding Case Report (poster). The Awards include free tuition for the AAOMPT conference the following year.

Jean-Michel Brismée, PT, ScD
Texas Tech University Health Science Center
jm.brismee@ttuhsc.edu

2009 CSM Awardees

OUTSTANDING PHYSICAL THERAPIST ASSISTANT STUDENT AWARD

Barry P. Buchiganani is a second-year student in the Physical Therapist Assistant Program at Somerset Community College in Somerset, Kentucky. Mr. Buchignani is not only an outstanding student at the top of his class but is highly involved in several service activities outside of the classroom. He was elected to serve in the role of class Special Events and Philanthropic Event Chairperson and participated in fundraisers for the 2008 Marquette Challenge. As a result of his and his classmates' efforts, the program received the "Outstanding Physical Therapy Assistant Program" Award in the 2008 Challenge. In addition, he served as the student coordinator for the SCC 2008 Physical Therapy Open House, which is a large recruiting event that is open to all faculty, staff, students, and the community and serves as a means of educating the public about the physical therapy profession. In addition, he volunteers as a peer tutor and mentor to first-year program students as well as participating in the Geriatric Section's annual educational brochure design competition. One of his student colleagues notes that "getting to know Barry has allowed me to witness an individual who is willing to devote a great deal of time helping his fellow students learn difficult concepts as well as improve their skills." One of his professors states that "through his diligent work effort, willingness to help others, and desire to be a successful clinician, Barry embodies the characteristics that make him a truly outstanding student." It is obvious Barry P. Buchignani is truly an outstanding individual and a most worthy recipient of the Outstanding Physical Therapist Assistant Student Award who has the potential to contribute to the Orthopaedic Section of the APTA.

OUTSTANDING PHYSICAL THERAPY STUDENT AWARD

The recipient of the Outstanding Physical Therapy Student Award is Renata Salvatori. Ms. Salvatori received her Bachelors of Science degree in Clinical Exercise Science/Pre-Physical Therapy from Virginia Commonwealth University. She will graduate in May of 2010 from the Doctor of Physical Therapy (DPT) program at Virginia Commonwealth University. Renata has distinguished herself as a strong leader serving not only as the President of her class but also as Chair of the Virginia Physical Therapy Association Student Special Interest Group. She has organized her class' participation in the "Trick or Feed" food donation program for the Richmond, Virginia food bank, as well as the annual VCU Physical Therapy Golf Tournament that serves as a student fundraiser for the Pittsburgh-Marquette Challenge to benefit the Foundation of Physical Therapy. In addition to balancing the demands of her professional program studies, Renata has also served as a research assistant in the Clinical Biomechanics Orthopaedic and Sports Outcome Research Laboratory and as a teaching assistant for the first-year physical therapy Gross Anatomy course. In quoting one of her professors, "Renata has proven herself an extremely hard worker, an excellent leader, and a good mentor." One of her student colleagues notes, "I have met my fair share of hard-working people over the years, but I am constantly impressed by Renata's ability to do everything that she does." Another one of her professors notes that, "Renata is an extremely bright and hard working individual who has all the makings of a future leader in the profession." It is obvious that Renata Salvatori is truly an outstanding student and a most worthy recipient of the Outstanding Physical Therapy Student Award, with a tremendous potential to contribute to the Orthopaedic Section of the APTA.

JAMES A. GOULD EXCELLENCE IN TEACHING ORTHOPAEDIC PHYSICAL THERAPY AWARD

Robert Landel, PT, DPT, OCS, CSCS, MTC is the 2009 recipient of the James A. Gould III Excellence in Teaching Orthopaedic Physical Therapy Award. Dr. Landel is an Associate Clinical Professor in the Department of Physical Therapy at the University of Southern California. As a faculty member teaching in the entry-level physical therapy program as well as the postgraduate residency programs, Dr. Landel epitomizes the role of teacher, mentor, clinician, and researcher. Since joining the Division of Biokinesiology and Physical Therapy at the University of Southern California in 2002, Dr. Landel has served as the Coordinator of the Third Year Musculoskeletal Curriculum as well as the Director of the Orthopaedic Physical Therapy Residency Program. One of his colleagues notes that "his theoretical preparation and his innate teaching abilities have allowed him to excel and develop exceptional instructional methods and presentation techniques as well as the ability to motivate students." Another colleague notes, "his hard work, dedication, and professionalism have resulted in substantial improvements to the musculoskeletal curriculum and better-prepared graduates." Dr. Landel always promotes an integrative and patient centered approach with his students that go beyond the common clinical categorizations of orthopaedic or neurological. He effectively incorporates emerging research and evidence-based concepts into his didactic coursework using a variety of instructional methodologies. As noted by another of his colleagues, "Rob is far more than an exceptional teacher – he is an individual with a vision of where the profession needs to move and works tirelessly to advance the profession with his clinical teaching – it is this unique combination of clinical instructor and leader that truly sets Rob apart!" Both current and former students speak highly of Dr. Landel's dedication and knowledge in the area of musculoskeletal physical therapy. One student states, "He is an asset to physical therapy and to me personally – much of what I have become and what I will do in physical therapy is because of him." Another former student writes,

"His significant contributions to our field through effective and innovative pedagogy, dedication to mentorship, and an infectious passion for both academic and clinical physical therapy makes a worthy recipient of this award."

It is obvious that Dr. Robert Landel is a most worthy recipient of the James A. Gould Excellence in Teaching Orthopaedic Physical Therapy Award. With this award, Dr. Robert Landel joins a distinguished group of faculty and clinical mentors in orthopaedic physical therapy.

ROSE EXCELLENCE IN RESEARCH AWARD

The recipient of the 2009 Rose Excellence in Research Award is Wendy J. Hurd, PT, PhD, SCS for the manuscript entitled: *"A 10-Year Prospective Trial of a Patient Management Algorithm and Screening Examination for Highly Active Individuals With Anterior Cruciate Ligament Injury, Part 2: Determinants of Dynamic Knee Stability," American Journal of Sports Medicine*, 2008;36:48-56. Dr. Hurd is a postdoctoral research fellow at Mayo Clinic in Rochester, Minnesota working in the motion analysis and biomechanics laboratories under the mentorship of Drs. Kenton Kaufman and Kai-Nan An. Her research emphasis is on neuromuscular contributions to joint stability, with an emphasis on shoulder, elbow, and knee injuries. Her current work, funded by Major League Baseball, is evaluating the influence of shoulder range of motion and strength on elbow biomechanics in high school-aged baseball pitchers. Wendy is an APTA Board Certified Sports Specialist, and in addition to her research work, continues a clinical practice treating shoulder, elbow, and knee injuries, with special emphasis on the overhead athlete.

Wendy received her physical therapy degree from the University of Missouri-Columbia; her masters and doctoral degrees were completed in the interdisciplinary biomechanics and movement science program at the University of Delaware under the mentorship of Dr. Lynn Snyder-Mackler. Previous accomplishments include funding awards from the Foundation for Physical Therapy, including the Mary McMillan, PODS I, and PODS II scholarships. Dr. Hurd and coauthors Dr. Michael Axe and Dr. Lynn Snyder-Mackler were recipients of the 2005 outstanding poster award for the AOSSM annual meeting for the investigation titled "*Quadriceps Strength, Laxity, and Function After Acute Isolated ACL Rupture: Relationship to Dynamic Stability.*"

RICHARD W. BOWLING – RICHARD E. ERHARD ORTHOPAEDIC CLINICAL PRACTICE AWARD

The recipient of the 2009 Richard W. Bowling – Richard E. Erhard Orthopaedic Clinical Practice Award is Shirley S. Sahrmann, PT, PhD, FAPTA. Dr. Sahrmann has positively and substantially affected the shape, scope, and quality of orthopaedic physical therapy through her clinical practice, education and research activities.

Having started her physical therapy career in 1958, Dr. Sahrmann has been a practicing clinician in the area of orthopaedic physical therapy for the last 30 years. She currently is a Professor of Physical Therapy, Cell Biology, and Neurophysiology in the Physical Therapy Program at the Washington University School of Medicine in St. Louis, Missouri. Although her doctoral studies were in the area of neurobiology, she has worked over the past three decades to develop a systematic approach to the examination and treatment of patients with movement dysfunction as a result of pain associated with musculoskeletal disorders. Her clinical observations have helped spawn numerous research studies that have contributed to the ongoing development of evidence-based orthopaedic physical therapy practice. As a result of her clinical experiences and research, she has been invited to present guest lectures in over 20 different countries as well as numerous universities, and has provided continuing education at APTA component meetings in over 40 states. In addition, she has also made significant contributions to the education of the students in both the entry-level and post-professional physical therapy programs at Washington University. Dr. Sahrmann has influenced countless numbers of physical therapists through her activities associated with the APTA. She has held a number of positions within the association, the highest of which was Board of Director. Her peers have recognized her through the awarding of numerous honors including: the Lucy Blair Service Award, the Marian Williams Research Award, the inaugural John H. P. Maley Lectureship, the Florence P. and Henry O. Kendall Practice Award, and the Mary McMillan Lectureship. She is also a Catherine Worthingham Fellow of the APTA.

In recognition of her consistent and sustained contributions to orthopaedic physical therapy clinical practice over the past 30 years, the Orthopaedic Section recognizes Shirley S. Sahrmann, PT, PhD, FAPTA as the recipient of the 2009 Richard W. Bowling – Richard E. Erhard Orthopaedic Clinical Practice Award.

THE PARIS DISTINGUISHED SERVICE AWARD

The Orthopaedic Section's Paris Distinguished Service Award for 2009 is being presented to Jan K. Richardson, PT, PhD, OCS. Therapy at Duke University. She served as Chief of the Doctor of Physical Therapy Program at Duke University from 1998 to 2008.

Jan has served the Orthopaedic Section with distinction in various capacities beginning in 1982. She first served the Section as the Chair of the Program and Education Committee from 1982 to 1986, during which time the Section's membership experienced substantial growth requiring increased educational activities. Recognized by her peers for her exceptional leadership abilities, Jan was elected as the Section's President Elect in 1986 and served as the President

of the Section from 1987 to 1992. It is of interest to note that Jan was the first incumbent Section President to run for a second term. During the six years that Jan served as President, Section membership increased from 8,000 to over 11,000 members. During her tenure as President, not only did the Section begin the planning for moving to the new Section building in La Crosse, but created the Steven J. Rose Research and the Paris Distinguished Service Awards. In addition, she enhanced, diversified, and promoted Section member benefits. While serving as President, Jan also represented the Section in the APTA House of Delegates as the Section Delegate and served on the Committee on Sections, which she chaired in 1991. After completing her second term as Section President, Jan was elected to the Board of Directors of the APTA for two terms. In 1997, Jan became President of the APTA and served in that office until 2000. While serving on the APTA Board of Directors and as President, Jan made significant contributions to the development of the *Guide to Physical Therapist Practice* and helped initiate Vision 2020.

As one of her nominators noted, "Jan was born a leader, from the first time I met her I could tell. Her vision was focused, her mission always defined, and I was always amazed at the organization of her meetings." As another of her nominators so appropriately noted, "Jan is most qualified for this award because of her contributions to the Section including the development and expansion of the orthopaedic special interest groups to promote best practice and professional development, as well as the establishment of the recognition of advanced practice in orthopaedic physical therapy through specialist certification."

In recognition of Jan's long history of outstanding service and exceptional contributions to not only the Orthopaedic Section but the entire profession of Physical Therapy, it is most appropriate that Jan K. Richardson, PT, PhD, OCS receive this prestigious Section Award.

JOURNAL OF ORTHOPAEDIC & SPORTS PHYSICAL THERAPY AWARDS

The Journal of Orthopaedic &Sports Physical Therapy's 2008 JOSPT Excellence in Research Award:

AWARDED TO
Mei-Hwa Jan, PT, MS; Pei-Fang Tang, PT, PhD; Jiu-Jenq Lin, PT, PhD; Shih-Chiao Tseng, PT, PhD; Yeong-Fwu Lin, MD; Da-Hon Lin, MD

FOR

Jan M-H, Tang P-F, Lin J-J, Tseng S-C, Lin Y-F, Lin D-H. Efficacy of a Target-Matching Foot-Stepping Exercise on Proprioception and Function in Patients With Knee Osteoarthritis. *Journal of Orthopaedic & Sports Physical Therapy.* Volume 38, Number 1, Pages 19-25. January 2008.

The Journal of Orthopaedic & Sports Physical Therapy's 2008 George J. Davies – James A. Gould Excellence in Clinical Inquiry Award

AWARDED TO
Filippo Mechelli, PT; Zachary Preboski, PT, CSCS; William G. Boissonnault, PT, DHSC, FAAOMPT

FOR

Mechelli F, Preboski Z, Boissonnault WG. Differential Diagnosis of a Patient Referred to Physical Therapy With Low Back Pain: Abdominal Aortic Aneurysm. *Journal of Orthopaedic & Sports Physical Therapy.* Volume 38, Number 9, Pages 551-557. September 2008.

VALUE OF ORTHOPAEDIC SECTION MEMBERSHIP

Steven R. Clarke, PT, MHS, OCS; Section Treasurer

At year-end 2008 the Orthopaedic Section had a total membership of 16,352 represented as follows:

Physical therapists 14,699
Physical therapy assistants 539
Physical therapy students 1,065
Physical therapy assistant students 49

The Section's 2008 expenses of $1,441,480 represented a cost per member of $88.15. In 2009 the budgeted expense is projected to be $1,549,584 which equals a cost per member of $94.76.
Membership dues generated $699,434 in 2008 or 48.52% of total expenditures. Thus, membership dues covered less than 50% of the total expenses for 2008 showing that Orthopaedic Section members received more benefits than what they actually paid for:

Annual Membership Dues
Physical therapist..... $50.00
Physical Therapist Assistant ... $30.00
Student (PT, PTA) $15.00

Additional income required for Section operations is generated by Independent Study Courses (ISCs), Combined Sections Meetings, *Orthopaedic Physical Therapy Practice* advertising, publishing contracts, property management, and investment reserves. This diversity in income generation has allowed the Section to maintain its dues at the 1994 level without having to impose an increase, thus allowing us to provide services beyond that which membership dues alone can offer.

In today's economic times, it is important to understand the value you receive from your Section membership. As we move forward in 2009 we will continue to work diligently to maintain this high level of return on your investment in Orthopaedic Physical Therapy!

bookreviews

Michael J. Wooden, PT, MS, OCS;
Book Review Editor

Kaltenborn F. *Manual Mobilization of the Joints, Vol 3: Traction-Manipulation of the Extremities and Spine (Basic Thrust Techniques).* Norli, Oslo, Norway; OPTP, Minneapolis, MN. 2008, 107 pp., illus.

This book, by world-renowned physical therapist Freddy Kaltenborn, is intended to introduce joint manipulation to entry-level physical therapists using safe and effective methods. Kaltenborn repeatedly stresses that this text is not meant to replace feedback from skilled practitioners, lengthy education, and practice. The text often refers to previous volumes for more a detailed explanation of key concepts and terms. The other volumes are *Manual Mobilization of the Joints, Volume I: The Extremities*, and *Manual Mobilization of the Joints, Volume II: The Spine.*

There are 5 chapters in this volume. In the introductory chapter, Kaltenborn stresses that rotary manipulations are not taught in his manual therapy philosophy because of the risk of traumatizing the vertebral arteries in the cervical spine, and the intervertebral disc in the lumbar spine. Manipulation is defined and described. The author states that joint manipulation is the most effective treatment available for intraarticular restrictions. In this section, the significance of the audible "pop" is discussed. The evaluation process is also described here. Clinical goals emphasized are: establishing a physical diagnosis, contraindications and indications to treatment, and establishing a baseline to measure progress.

Manipulation technique is the title of the second chapter. Joint mobilizations and manipulations are compared and contrasted. The principles of thrust techniques are described. The confirmation that a joint's end-feel is appropriate for manipulation is the first step. The second step is placing the targeted joint in its actual resting position. The next step is establishing the line of drive for the thrust, and then the thrust is applied. The factors that make up a traction-manipulation thrust are presented. The proper quality, amplitude, grade, timing, and force are discussed.

The third through fifth chapters make up the bulk of the book. Chapter 3 focuses on the techniques for the extremities, chapter 4 the spine and chapter 5 the jaw. Finding the actual resting position in the extremities and the spine, is described in detail. For each specific area of the body, the normal resting position, the actual resting position and the line of drive for traction-manipulation are described. In these sections there are depictions of the line of force as well as black and white photos of each technique. Pictures are clear and augment the written descriptions. Additional notes are provided for some of the techniques due either to the unique characteristics of the joint involved or the technique itself.

The appendix is filled with interesting information. The history of traction is traced back to 300-400 BC. Traction techniques used by Hippocrates for the spine and extremities are illustrated. The history of the Swedish Gymnastik Directors is discussed. This led to Medical Gymnasts who eventually became known as Physical Therapists. The evolution of Nordic manual therapy was presented. Various practioners provided input to the Nordic system including, James Mennell, MD; James Cyriax, MD; Alan Stoddard, MD, DO. Kaltenborn's training and influence on the field of Manual Therapy are depicted. The founding of the International Federation of Manual Therapy is presented. Comments about avoiding rotary manipulation and further research that is needed, along with guidelines, are offered.

Kaltenborn has written this book for the entry-level physical therapist, however, his wisdom and clinical pearls are valuable to any orthopaedic clinician. While the reader might be tempted to go immediately to the technique sections of this text, they would be remiss not to study first the introduction at great length. Kaltenborn's writing style is succinct and to the point. While this text could have included more research, such as the incorporation of clinical prediction rules, this text belongs on the desk of the manual therapist to compliment those on Manual Mobilization of the Spine and Extremities.

Jeff Yaver, PT

Kneale A. *Desk Pilates: Living Pilates Every Day.* Minneapolis, Minn: OPTP; 2008, 46 pp., illus.

Kneale A. *Stretch Out® Strap Pilates Essentials.* Minneapolis, Minn: OPTP; 2008, 50 pp., illus.

These 2 short monographs are written by an occupational therapist who is Stott Pilates certified. They offer excellent introductions into the basic concepts of the Pilates method and the principles of core strength, breathing, and posture. The books include approximately 30 pages of exercises and postures.

Desk Pilates adapts principles of the Pilates Method to seated or standing positions, to be performed easily at a desk. The book recommends "recess sessions" throughout the day to allow a break from the typical desk posture, and to promote focus on mind, body, and breathing. Exercises include breath work, alignment, extension, flexibility, segmental range of motion, core, and transversus abdominus engagement, as well as balance and proprioception. Each exercise has at least one page devoted to step-by-step instructions including imagery, cuing, and sequence. Keale's adaptations of the traditional Pilates exercises are appropriate for sedentary desk-workers who wish to incorporate the principles into their daily routine.

Stretch Out® Strap Pilates Essentials is designed in a similar fashion, and uses a more traditional set of Pilates exercises in supine, prone, sidelying, seated, and standing positions. These techniques include use of Stretch Out® Strap that allows additional modification and control. The nylon Strap multiple loops used for various hand and foot placement and positioning. The strap is incorporated into the traditional exercise set by allowing greater external feedback for positioning and alignment. Although all the exercises in the book are traditionally taught without the strap, the strap modifications are excellent for physical therapy patients to provide assistance, and to ensure proper technique during unsupervised home programs.

Both booklets would be excellent options for patients to purchase, as a supplement to their Pilates-based rehabilitation. (As a cautionary note: patients may require basic instruction in the Pilates method before performing some of the exercises without supervision.) The author has done a wonderful job of modifying traditional Pilates exercises with the typical patient in mind.

Amanda Blackmon, DPT, PMA Pilates Certified

Buckup K. *Clinical Tests for the Musculoskeletal System, Examinations – Signs – Phenomena.* 2nd ed. New York, NY: Thieme; 2008, 326 pp., illus.

The second edition of this soft-cover handbook is an authorized and revised translation from the original German language version. In the preface, the author states the purpose of this edition is to facilitate the examination of patients in order to arrive at a diagnosis and initiate treatment more quickly. There are 10 chapters, each addressing a different joint or area of the body or particular diagnostic concern, with 521 illustrations.

Chapters 1 through 7 address a particular joint complex. Each begins with a brief overview of clinical examination principles for the particular joint, followed by illustrations of normal ranges of motion using the "neutral zero method." Next, each chapter includes a synopsis in the form of a flow diagram that guides the clinician to a probable diagnosis based on results of the clinical tests. These diagrams, new to the 2nd edition, add an element of diagnostic clarity for the clinician who has many options to consider. The flow diagrams are followed by descriptions and illustrations of clinical tests for each joint. The name of the test is listed followed by the purpose of the test (eg, Cozen test: indicates lateral epicondylitis). Next, the test procedure is described followed by "assessment," which describes results of the tests and their clinical relevance. A line drawing of each test is included for clarity.

Chapter 8 addresses clinical tests for "Posture Deficiency." There is a one page overview of posture assessment followed by a description of 2 types of posture tests: the Kraus-Weber and Matthias Postural Competence Tests, with illustrations of each. Chapter 9 addresses "Venous Thrombosis." The author emphasizes the importance of testing for this condition and describes and illustrates 4 tests to rule-out venous thrombosis. Chapter 10 addresses "Occlusive Arterial Disease." Included in this chapter are 3 tests for vascular disorders, 5 tests for thoracic outlet syndrome which are described as tests for "neurovascular compression syndrome," and 2 tests for hemiparesis.

Overall the procedures and assessments described for each clinical test are clear and easy to follow, and the illustrations are an accurate rendition of the test techniques. A welcome addition to this edition are the flow diagrams which quickly direct the clinician to the appropriate tests, and assist in determining a probable diagnosis.

However, there are some weaknesses. Unlike other handbooks on clinical texts, this volume does not have references in the chapters for each test. There is a list of references at the end of the handbook but they are not referenced to the material in the chapters. Also this handbook does not include sensitivity and specificity values for each clinical test. The illustrations of the tests are very basic black and white line drawings. There are no photographs of clinicians applying these tests as seen in other publications that include clinical tests. There is a typo on page 76 where the "palm sign" is described for both the palm sign test and the finger sign test. Also in Chapter 10 one of the causes of thoracic outlet syndrome is described as "presence of an atypical small scalene muscle," which implies that the scalene muscle is too small rather than the presence of an additional scalene muscle. Perhaps these errors occurred in the translation from the German language.

This handbook can be a handy reference for clinicians or students who need a review of the purpose and technique of clinical tests for examination and diagnosis of musculoskeletal system problems. Unfortunately, the lack of specific references, sensitivity, and specificity for each test limits the value of the handbook in the practice of evidence-based medicine.

Thomas P. Nolan Jr., PT, DPT, OCS

Gilroy AM, MacPherson BR, Ross LM. *Atlas of Anatomy.* New York, NY: Thieme; 2008, 656 pp., illus.

As noted in the preface, the intent of *Atlas of Anatomy* is to provide the health science student with a concise single volume atlas of anatomy that has exceptional, comprehensive illustrations as its cornerstone.

The book is divided into 7 sections based upon regions of the body: back, thorax, abdomen/pelvis, upper limb, lower limb, head/neck, and neuroanatomy. The back, upper limb, and lower limb sections cover the skeletal anatomy, musculature, and neurovasculature for each region. The thorax, abdomen/pelvis, and head/neck sections cover the skeletal anatomy, musculature, organs, lymphatics, and neurovasculature for each region. The neuroanatomy section covers the anatomy and vasculature of the brain and spinal cord, as well as the functional units and divisions of the nervous system. Each section also has topographic anatomical images that tie the systems within the region together and images pertaining to surface anatomy.

The book contains 2,200 high quality, full-color illustrations. These provide excellent detail of anatomic structures which are labeled in an appealing manner. Smaller "navigation" images are used when necessary to orient the reader to the location and plane of the image. Additionally, brief introductory texts offer useful assistance to the reader when a new topic is introduced, and figure legends provide outstanding explanatory descriptions of the figures. Multiple tables throughout the book summarize relevant material, including all muscle origins, insertions, innervations, and actions.

There is a strong emphasis on the neuromusculoskeletal system in each section. For example, in the abdomen and pelvis section, the regional approach taken by the authors skillfully relates the anatomy of the internal and reproductive organs to that of the neuromusculoskeletal system. As this book was written with the health science student in mind, it contains many correlates that integrate the material with clinical conditions and scenarios. Additionally, radiographs, computed tomography scans, magnetic resonance imaging, and endoscopic views are used throughout the book to provide the reader with diagnostic imaging correlates of the anatomical figures. Surface anatomy illustrations are accompanied by study questions (with comprehensive answers provided in the appendix) designed to direct the reader's attention to anatomic detail that is relevant in conducting a physical examination.

An interesting feature of this book is that readers are provided access to links to WinkingSkull.com, a user-friendly website that features more than 200 illustrations from *Atlas of Anatomy*. Buyers of *Atlas of Anatomy* have access to additional anatomical and diagnostic images with explanatory schematics that build on the clinical aspects of this book.

Atlas of Anatomy is an extremely valuable teaching text that is well-suited for professional and postprofessional anatomy courses, including those taught to physical therapist and physical therapist assistant students. This book would also serve as a valuable reference text for physical therapy orthopaedic fellowship or residency programs and hospital or university libraries, where it can be accessed by several different medical disciplines.

Michael D. Ross, PT, DHSc, OCS

occupationalhealth

SPECIAL INTEREST GROUP

Greetings OHSIG Members!

I want to thank Joe Kleinkort and Dee Daley for coordinating various meetings at CSM Las Vegas, since I was unable to attend due to knee surgery. I thought I would include the minutes from the OHSIG General Business Meeting in this issue of *OPTP,* thinking our members would be interested in reading the minutes to find out what we are working on. The meeting was held at 7am, before our educational session—a challenge to say the least! We hope to find a better time for this meeting at CSM 2010. It's important to us that we give OHSIG members the opportunity to participate in the educational sessions and business meetings we have at CSM. We will work to find a better time next year! OHSIG is off to a great start for 2009. Read below!

Sincerely,

Margot Miller PT
President OHSIG

Orthopaedic Section APTA
OHSIG General Business Meeting
Wed. 7-8 am CSM Las Vegas 2009

Call to Order/ Welcome : Joe Kleinkort

1. President's Report - Margot Miller was absent, report presented by Dee Dailey
- Practice Analysis complete and in OPTP
- Guidelines for FCE are complete and found on Ortho Web site under Occupational Health
- WorkRehab Guideline in process of revision by John Lowe and Dee Daley
- Ergo Guideline in process- Rick Wickstrom and Janet Peterson coordinating
- Acute Care Guideline Update - Robert Duvall and Lorera Petit coordinating
- Legal- Gwenn Simons and John Lowe coordinating
- PT Role in Occ Health deferred until 2010
- Specialization in OH: There is general support for a certification process similar to Manual Therapy, possibly certification based on portfolio review without a written exam. Work with ABPTS is ongoing. Discussed fellowship vs residency options for occ health. Margot Miller and Dee Daley coordinating.

2. Vice President's Report - Steve Allison was absent, no report presented.

3. Membership Chair – Rick Wickstrom
- Updating FCE Guidelines are complete; working on plans to disseminate to chapters, licensing board, payers, etc.
- Plan to develop liaison with each state chapter to help disseminate and educate about FCE guideline dissemination and other guide
- Working on FCE powerpoint that any Occ Health SIG representative can present in person
- Will investigate webinar presentation option for FCE guideline

4. Practice Chair- Drew Bossen
- OSHA Region V and APTA Alliance
- Multiple Safe Handling programs in 7 states
- Margot Miller and Mary Fran Delaune are presenting at MN APTA Spring Conf, along with Dave Furkel from MN OSHA.

5. Research Chair - Kathy Rockefeller
- Worked with Dee to plan the education sessions for CSM.

6. Treasurer- Nicole Matoushek absent, no report submitted

7. Secretary- Joe Kleinkort
- Time for conf calls May, Aug, Nov 1st Thurs 2PM EST
- Deadline for OPTP 26 Feb, 5 June, 21 Aug, 27 Nov
- Same deadline for President report
- Considering a time for OHSIG BOD to meet this summer

8. Education- Dee Daley
- Discussed possibility of Alan Hedge for 2010 CSM speaker
- Discussed how to get most in audience attendance; Drew will help with WC-ICF and marketing.
  Other business: Consider alternative time for Business Meeting to attract more members.

Meeting adjourned at 8 am

Submitted,
Joe Kleinkort, PT, MA, Ph.D, CEASII, CIE, DAAPM
Secretary OHSIG

JOB ACCOMMODATION SUCCESS STORY

Rick Wickstrom, PT, CPE, CDMS
President, WorkAbility Network
rick@workability.us

On September 25, 2008, the ADA Amendments Act of 2008 (ADAAA) was passed that significantly broadened the scope of protection available under the Americans with Disabilities Act of 1990. The critical inquiry under this amended law is no longer on whether the individual has a disability, but whether covered entities have engaged in an interactive process that supports reasonable accommodation of qualified disabled applicants and employees. Physical therapists have a unique skill set that can assist in the process for developing job accommodations to prevent needless work disability of persons with musculoskeletal conditions.

This case example illustrates the process of progressive job modification, leading to safe return to productive work of a 57-year-old female wheel assembler who underwent left shoulder surgery for acromioplasty and repair of a partial thickness rotator cuff tear. When Bonnie was still disabled after more than a year of extensive postoperative physical therapy and chiropractic care, she was referred to Rick Wickstrom, PT, CPE, CDMS of WorkAbility Network for a functional capacity evaluation to evaluate her physical abilities and vocational rehabilitation potential. Her 1989 BWC claim is allowed for 722.0 cervical disc displacement, 847.0 sprain of neck, 840.6 tear to left supraspinatus, 721.0 degenerative facet arthropathy (aggravation of pre-existing condition), 723.0 foraminal stenosis (aggravation of pre-existing condition). Previously under this workers compensation claim, she had underwent a C4-5 fusion in 1996 and returned to limited, modified duties as an assembler of the smaller wheels. Because of her limited progress with transitional therapies, Bonnie was unsure if she could ever return to her previous wheel assembly duties. Her past medical history was also significant for non-occupational surgeries of the right fourth finger for trigger finger and arthritis affecting her right shoulder and both hands.

REVIEW OF RECENT JOB DUTIES

Bonnie reported that her most recent modified duty assignment involved assembling the smaller wheels 8 to 10 hours a day, 5 days a week and often worked for a half-day on Saturdays. Her responsibilities include drilling holes in plastic wheels using a machine, using a hammer to insert zerk fitting to the wheel, greasing bearings for the wheels, press-fitting the winger hardware, placing the completed wheel assembly in a rolling crate, and transporting the crates to the storage staging area. She used a rolling step ladder to climb up to get bearings supplies. She was assigned primarily to the small wheels that were 10# or less, but this job was highly repetitive.

OBJECTIVE DIAGNOSTICS

She elected to avoid any further neck surgery, even though her 4/14/07 MRI cervical spine w/o contrast was significant for: "(1) Broad-based central disc herniation involving C5-6, resulting in ventral cord effacement with resultant cord flattening deformity. (2) Right central/preforaminal disc herniation of the extrusion type at C6-7, producing rightward ventral cord effacement and associated cord flattening deformity, as well as mass effect on the C7 right nerve complex. (3) Central disc protrusion at C3-4 and C7-T1, resulting in ventral cord abutment. (4) Luschka and facet joint degenerative arthropathy at C5-6 and C6-7, resulting in moderate-severe foraminal stenosis. (5) Status postdiscectomy at C4-5." Her 7/27/07 EMG was significant for "Mild membrane irritability seen in the paraspinal muscles in the area of C5-6 on the right. There were no EMG abnormalities seen in any of the other right upper limb muscles. The median and sensory studies were normal."

SUMMARY OF FUNCTIONAL CAPACITY RESULTS ON 2/4/08

Active range of motion was significant for POOR active ROM of the neck and bilateral shoulders; and FAIR active ROM of the lumbar spine and both hands. Strength tests were remarkable for LOW grip strength (R 38#, L 30#), LOW pinch strength (R 9# L 11#), LOW arm lift strength (R 13#, L 16#), LIGHT horizontal pull strength (34#), LIGHT horizontal push strength (32#). Manual dexterity for both hands was LOW on the Total-Body Dexterity Test. Finger dexterity for both hands was LOW on the Grooved Pegboard Test. Agility/dynamic balance was MEDIUM on the PAT Agility Mat Test. Her aerobic capacity of 3.7 METS suggested generalized deconditioning consistent with a LIGHT level of physical demands. On Ergo-Totes materials handling tests, she was recommended to OCCASIONALLY lift 0# overhead, 10# at chest level, and 15# from floor to waist level; FREQUENT lifting from floor to waist level was 8#; and CONSTANT lifting 1#. Additional work recommendations included no ladders and no reaching above 64". Because her physical abilities were nearly a match for her last reported modified duty assignment, it was recommended that she be referred for transitional work therapy services to implement any recommended accommodations, including a gradual return to work schedule. She was also recommended for a TENS trial for self-management of symptoms using as an alternative to ongoing electrical stimulation with her chiropractor.

TRANSITIONAL WORK THERAPY SERVICES

A job task analysis was conducted with participation by Bonnie and her plant manager to identify key physical demands and work performance barriers as a first step toward developing a job-specific therapy plan of care to address work performance issues that limit safety and productivity. Under an employer incentive program through vocational rehab services, Bonnie returned to work on 3/18/08 for 4 hours per shift on a gradual, self-paced return to work schedule with the support of transitional work therapy services.

Transitional Work Therapy is an Ohio BWC recognized functional treatment program (W0637) which allows an injured worker to receive industrial therapy services at the work-site as part of a structured, time and task oriented return to work program. The service includes work task assignment and advancement, periodic workability assessments, education in pacing/safe work methods, and assistance with job modification/accommodation. The program is focused on transitioning a worker with physical limitations back to the original job tasks within a specific time period. Services are rendered one-on-one by a licensed physical or occupational therapist at the job-site at a visit frequency from 1 to 3 times per week. All services are provided during the worker's scheduled work shift in accordance with a written job task progression plan.

The following job accommodations were implemented during Bonnie's transitional work therapy services:

1. Restructuring of her job to require warehouse workers to supply heavy 85# boxes of bearings: Bearings were supplied to her work station by the warehouse worker, who used a bearing lift to transport and position 85# boxes of bearings at her work station. This aid reduced the effective lift to 45#.		 Bearing supplies at work station
2. Reconfigure workstation.	 Old workstation layout	 New lean manufacturing layout
3. Make drilling fixtures for wheels lighter.	 Old fixture (25#, too heavy)	 New fixtures (5# each)
4. Lower triggering controls on vertical drill.	 Old trigger controls (shoulder level)	 New triggering controls (below chest level)
5. Stabilize wheel during hammering to insert zerk.	 Old hammering station (wheel not stabilized)	 New hammering station (wheel stabilized)

6. Elevate hydraulic press.

Old hydraulic press (vision obstructed)

Modified hydraulic press (raised 4")

OUTCOMES

Bonnie was progressed for 4 to 8 hours over a 2-month time period participating in transitional work therapy services for coaching pacing and safe work methods, progress of self-exercise, and facilitation of job modifications. Her company went the extra mile to accommodate her permanent restrictions. These accommodations allowed her to assemble smaller wheels in a safe and productive manner. Additionally, we identified other LIGHT janitorial duties that she was able to safely perform during slower production days when there was not a demand for smaller wheels. Successful return to work was determined based on no ongoing absenteeism issues and employer satisfaction with production at 90 days following release to return to work. Bonnie reported that job modifications allowed her to improve her productivity within a tolerable level of chronic symptoms by eliminating unnecessary reaches, forces, and walking in accordance with good ergonomic design and lean manufacturing practices. More efficient productivity was important because Bonnie previously took shorter rest periods to compensate for limited hand dexterity secondary to arthritis affecting both hands. More efficient work station design helped her avoid unnecessary forces and awkward postures that aggravated her symptoms. If these job modifications had not been made, Bonnie would have had difficulty obtaining suitable employment given her physical limitations and limited education/transferrable skills.

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APTA Combined Sections Meeting - Las Vegas, NV

February 11, 2009

Stephen Paulseth, President, called the Foot & Ankle Special Interest Group (FASIG) business meeting to order at 7:00am on February 11, 2009. The meeting was held at the Mandalay Bay Convention Center, Las Vegas, NV. There were 31 in attendance.

MOTION:

It was moved by Steve Paulseth to adopt the minutes from the February 2008 meeting of the FASIG business meeting. Rob Martin seconded the motion. The minutes were approved unanimously.

REPORTS:

Chair (Steve Paulseth)

Survey information: The survey to identify the content of foot and ankle in the curriculum of entry-level PT programs as well as what clinicians are treating has been distributed. The results collected from last year as well as those collected this year will be looked at. Very few responses from faculty members have been received. The FASIG will continue our practice analysis and DSP. This information will help in establishing the ground work for a Foot and Ankle Fellowship.

An "Ask the Expert" blog and brochure is being developed by the Ortho Section.

OP: Contributions for publication, such as "clinical pearls" are needed from the FASIG membership.

We have received several correspondences from SIG members concerning finding a Foot and Ankle PT specialist in their area or answering specific questions about patient problems and research. We have conducted numerous phone calls concerning the SIG business over the past year in order to communicate about programming, faculty, OPTP contributions, etc.

Practice standard development continues with our survey to all of the entry-level PT programs nationally. This information will be analyzed and then recommendations will be made to each PT program concerning the necessary content for foot and ankle that should be included in their curriculum. Thus far we have had a poor response from the various schools.

Reimbursement for Foot Orthoses by third party payors varies from company to company and by state. Generally, even when a company consents to reimbursing for the devices, they rarely pay. Thus cash fees apply to most patients.

We have provided, on a regular quarterly basis, a related article in OPTP. Our annual business meeting further addresses the membership's concerns and problems.

An extremely high level of research has been published by several of our SIG members in many different peer reviewed formats, as is usually the case each year. Rob Martin, our Vice President has consented to contribute to the Clinical Research Agenda (CRA) committee for our SIG.

Our SIG has operated well under our budget this past year even though we have a large unencumbered funds account balance.

Vice-Chair (RobRoy Martin)

Education: Programming for this year's CSM pre-con and 3 hr education session were reviewed. Suggestions from the members regarding future program topics. Ideas were then solicited from those present and included:

Radiology/Imaging for the Foot and Ankle
Talar and Calcaneal Surgery
Biomechanics and Over use Injuries
Case Reports and Panel Discussion by Experts on the Cases
Mid-Tarsal Joint
Forefoot Surgeries and Intervention

Research Committee

Debbie Nowazinski was not present.

Practice Plan Committee (Clarke Brown)

Looking for input as to future direction for the committee.

Will compile the e-mail address from those at this business meeting as well as the e-mail address from others who want to be involved in the FASIG. Later this year he will e-mail the group to try to enhance communication throughout the year.

Nominating Committee (Susan Appling)

The group was reminded that President position will need to be filled next year.

OLD BUSINESS:

In accordance with the Strategic plan for the Orthopaedic Section, we are moving towards establishing a fellowship for the foot and ankle. Through the efforts of Clarke Brown and Rob Martin and Tara Fredrickson at Ortho, we have distributed and published a survey in OP to identify the content of foot and ankle in the curriculum of entry-level PT programs.

NEW BUSINESS:

It was suggested that the FASIG consider offering a research grant. This grant would be under the care of the Ortho Section Grant committee. Discussions for the value of this grant were held and it was established that $25,000 of funds will be apportioned via an Orthopaedic Section committee and FASIG.

Survey for DSP sent to PT programs nationally.

Continue AOFAS and Podiatric liaison.

MOTION:

Mark Cornwall made the motion to offer a $25,000 grant for next year. Steve Reischl seconded the motion. The motion was unanimously approved. Rob Martin and Jeff Houck were selected to represent the SIG on the Ortho Grant Committee.

MOTION:

It was moved by Rob Roy to adjourn the meeting until February 2010 in San Diego, CA. The motion was seconded and approved. The meeting was adjourned at 7:55am.

Respectfully Submitted by,
RobRoy Martin
Vice President and Acting Secretary

TAPING TECHNIQUES FOR ACHILLES TENDINOPATHY

RobRoy Martin, PhD, PT, CSCS
Duquesne University

Stephen Paulseth, PT, DPT, SCS, ATC
Paulseth and Associates Physical Therapy

Christopher Carcia, PhD, PT, SCS
Duquesne University

Achilles tendinopathy is a common overuse injury seen in sports medicine clinics.[1,2] The incidence of Achilles tendinopathy in runners has been reported to be between 7% and 9% annually.[3,4] Generally, studies note predominately males subjects with a mean age between 30 and 50 years.[1,5-8] When looking at impairments, abnormal dorsiflexion and subtalar range of motion, decreased plantar flexion strength, and increased pronation have been associated with a higher incidence of Achilles tendinopathy.[1,9-11] Training errors, environmental factors, and faulty equipment may also be associated with Achilles tendinopathy.

Nonoperative intervention for acute-to-subchronic Achilles tendinopathy is generally successful and gives patients a favorable long-term prognosis for full or near full recovery.[8] Most of the evidence supports the use of eccentric calf exercises as the most effective intervention.[5] The program consists of unilateral eccentric heel raises (3 sets of 15 repetitions performed twice daily) with both the knee extended and flexed.[12] Orthotics, heel lifts, stretching, and low power laser also have been studied with limited evidence to support their use.[5,13-19]

One intervention that we find to be effective as a component of the overall intervention program is the use of taping techniques. We have used 2 techniques with positive results. The first technique is an 'off-loading technique' (Figures 1, 2). With this technique 2 pieces of Cover Roll® (Beiersdorf-Jobst; Charlotte, USA) are first placed on the skin starting just proximal to the painful area. Each piece is then stretched distally, one to the medial midfoot and to the second to the lateral midfoot (Figure 1).Two pieces of Leukotape® (Beiersdorf-Jobst; Charlotte, USA) are then applied in a similar fashion (Figure 2). The second taping technique attempts to impose an equinus constraint to the ankle. With this technique anchors, using standard athletic tape, are applied to the distal calf and midfoot. Elastikon® (Johnson & Johnson; Langhorne, USA) is then applied in a distal to proximal fashion with the foot in a plantar flexed position. Anchors are again reapplied (Figure 3).

Anecdotally we have found both techniques effective in patients with Achilles tendinopathy. Particularly, we find the techniques help decrease pain for individuals who have more acute as opposed to more chronic symptoms. The first unloading taping technique may reduce direct loading to the Achilles tendon while allowing near normal function. The second constraining technique, with the stretching properties of the Elastikon®, helps to limit dorsiflexion range of motion while assisting in generating plantarflexion forces. Because this second technique is more restrictive compared to the first, we find it to be more effective for individuals who need extra support, such as those participating in rigorous sporting activity. Both of these techniques can be used in conjunction with taping techniques directed to help support the arch, such as Low-Dye. While studies have investigated the effectiveness of the arch support techniques,[20,21] there is a void of research investigating the effectiveness of either the 'of oading' or 'equinus constraint' techniques. Further research is needed not only to support the use of these techniques but also help to determine which technique may be most effective for particular patient characteristics.

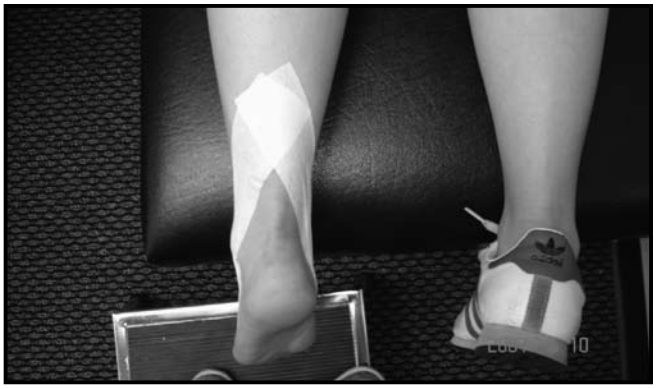

Figure 1. Cover Roll® applied for the Of oading technique.

Figure 2. Leukotape® applied for the Of oading technique.

Figure 3. Taping technique with Elastikon® attempting to impose an equinus constraint.

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SPECIAL INTEREST GROUP

President's Newsletter

Combined Sections Meeting (CSM) is a wonderful opportunity to hear renowned speakers, learn new evidence, review familiar didactic information, and network with colleagues. This year's CSM in Las Vegas was no different.

We were pleased with the great turnout for the PASIG's annual business meeting. This newsletter has the minutes from the meeting; **please feel free to provide us with feedback on the new goals**. Thank you to the Board members and Committee chairpersons who attended this meeting and contributed over the past year.

The PASIG's educational programming on the foot and ankle was well attended by over 300 people. We heard the most recent evidence on evaluation and manipulative therapy. We heard case studies on dancers and ice skaters, and learned taping techniques. Thank you to all of our speakers for the valuable information, and to Tara Jo Manal for coordinating another successful educational session. The handouts are available on the APTA Web site to those who attended CSM.

The PASIG has many new initiatives that we are working on (see meeting minutes). If you can help with updating databases or contributing to PA handouts on our Web site, if you have a PA clinical affiliation or an expertise in music or gymnastics, **we would like to hear from you**.

Yours in the arts,
Leigh A. Roberts, DPT, OCS

Amy Humphrey (left), Chair of the PASIG Student Scholarship Committee, and Leigh Roberts (right) presenting the student scholarship award to Brooke Winder (middle) from the University of Southern California for her research entitled, "Lower-Extremity Joint Kinetics During the Takeof Phase of a Grand Jeté Performed by Elite Dancers."

Performing Arts SIG
Annual Business Meeting Minutes
February 12, 2009
Combined Sections Meeting, Las Vegas

I. Call to order at 7:00 AM PST
II. Approval of Minutes from CSM 2008---motion for approval by Shaw Bronner and seconded by Karen Hamill
III. President's Report – LEIGH ROBERTS
  a. SIG Restructuring
    i. Only 2 elected officers: President and Vice President
    ii. Publications in OPTP – only 2 required, but we will still try for 4 as a member service
      1. Business meeting minutes in next OPTP, 2 case studies (solicit, offer editorial assist), CSM information
    iii. Budget changes – see below
  b. PASIG direction
    i. Goals developed (underlined) based on SIG policies (bold)
      1. Leigh & Tara met to identify direction. Looked at new SIG policies and previous PASIG strategic planning. READ POLICY & GOAL BELOW
      2. Urged Business Meeting Attendees to rank activity – top 3 goals and any other topics that they deemed important; inquiring if Web site info should be free to Ortho Section members and a small fee for non Ortho Section members
        a. Top three priorities as indicated by attendees:

A2. Contribute to professional expertise development in the area of performing arts.
E2. Create and maintain material in performing arts related areas.
C1. Develop resource material for the practice resource page.

PAsig is looking for a content expert for each project.

IV. Vice President's Report - TARA JO MANAL
  a. Education Committee
    i. Discussed Dance Medicine Independent Study Course that came out in Fall 2008, 145 copies were sold.
    ii. Proposed that more clinically relevant series be developed including a motion to be commissioned for the writing of an Independent Study Course for 2010 on Figure Skating.

V. Treasurer's Report – AMY HUMPHREY
  a. Budget Changes from SIG restructuring
    i. SIG budget reduced from $5000 to $2500, however, no longer included: President & VP travel to CSM, speaker honorarium, food for business meeting. This is actually an increase in spending for projects.
  b. Approve Budget for 2009- ($2500 total)
    i. $1500 to support for elected officers to attend CSM
    ii. $400 for Student Scholarship
    iii. $200 for President / VP retreat

iv. $400 for projects TBD
v. Motion for approval with budget approved by members

VI. Committee Reports

a. Scholarship – AMY HUMPHREY
i. Brooke Winder, SPT from Univ. of Southern California was presented with scholarship for "Lower-Extremity Joint Kinetics During the Takeoff Phase of a Grand Jeté Performed by Elite Dancers"

b. Membership – JULIE O'CONNELL
i. Survey Report - - Fifty-four members completed the survey as of January 11, 2009; this represents an 8.3% return rate. The results elucidated demographic information such as: years of experience, specialty certifications, practice setting, patient load, etc. Members showed interest in CEU courses offered by the PASIG (n=50) and most prefer a home study course (n=34). Members rate the monthly citation blasts (n=48) usefulness a 4.3 / 5. Members (n=36) rate the Web site usefulness as 3.5 / 5. There is interest (n=22) in developing a performing arts residency/fellowship programs and 33 members provide PA student affiliations. Clinicians see a varied number of patients in various performing arts areas, including dancers (n=35), gymnasts (n=19), skaters (n=19), musicians (n=19), vocalists (n=15), circus performers (n=3), cheerleaders (n=1), and Broadway performers (n=1). Eleven members have published PA papers; 22 members would like assistance in writing research. A small number of members (n=4) reported that they cross state lines to treat PA patients. Members would like more information about treating musicians. No person who attended the meeting indicated that they did not receive survey.
ii. A motion has been made to explore the expense of creating a database for SIGs. This would require adding more cells to Web site in order to obtain information for example city and specialty.

c. Nominating Committee Sheyi Ojofeitimi, Chair, Heather Southwick and Jason Grandeo, Members at Large
i. Offices Open in 2010 – Vice President, Nominating Committee

d. Research **Shaw Bronner PT, PhD, OCS, PASIG Research Committee Chair**
i. Increase PASIG membership contribution to the Citation BLASTS.
37 Citation Blasts have been e-mailed to date. Shaw continues to ask for help with Citation Blasts.
ii. Sent March 2008 citation blast to all Orthopaedic Section members.
The post-CSM March Citation Blast 2008 sent to all Orthopaedic Section members netted 16 additional members. We will continue to implement this following CSM 2009.
iii. *Contact PA practices accepting affiliating students to gather names of all schools with PA clinical affiliation contracts.*
We currently have 14 PA clinical affiliations listed on the PASIG Web site with updated information. This needs updating from 2007.
iv. Provide support for student researcher(s) in PA-related topics.
This year, there were 3 student scholarship applications, similar to last year.
v. Increase CSM abstract submissions.
Calls continue to go out reminding members about CSM platform and poster abstract submission deadlines. For CSM 2009 we had a total of 7 accepted PA platform and poster presentations, from 4 in '06, 6 in '07, 7 in '08.

e. Practice – LEIGH ROBERTS
i. Future direction for the PASIG Web site will be to disseminate information shown in the table. WE CALL THIS THE "VISION" OF PASIG.
ii. A motion has been submitted for approval of posting downloadable information on the Web site.

VII. New Business

Jen Gamboa indicated that PASIG needs to identify specific liaisons for each different dance organization (IADMS, PAMA, etc...). At this moment PASIG is not on these organizations' radar.

Meeting Adjourned at 7:45 AM PST

SIG POLICIES (BOLD) WITH PASIG GOALS DEVELOPED (UNDERLINED)

ADDENDUM please note numbers in (blue) at end of fragment indicates the number of votes received at Business Meeting

A. Provide Educational Programming to Section membership

1. Provide high quality pertinent educational programming at CSM annually (required) (2)
   a. DSP guided educational programming
      i. Create priority list of topics
   b. Coordinate speakers, content, and on-site programming support
   c. Develop member resources from educational programming
      i. OPTP case submission
      ii. Submission for practice resource page
2. Contribute to professional expertise development in the area of performing arts (19)
   a. Resource for residency/fellowship development (1)
   b. Professional development course or other media for expertise development (podcast with powerpoint, virtual rounds) (2)
   c. Clinical affiliation clearinghouse

B. Serve the Section as an Education and Practice Resource for Section members

1. Disseminate information to Membership on Performing Arts related topics (1)
   a. Resource list for PA related organizations, courses, materials, conferences
   b. Practice resource page
2. Maintain database of clinicians in the field

C. Develop and recommend practice standards and terminology

1. Resource material for the practice resource page (16)

a. Synthesize Data on Specific PA Related Areas (ie, clinical commentary, monograph)
b. Clinical Guidelines (1)
c. PA Specific Progressions (2)
d. Resource Papers and Fact Sheets

D. Identify changes in legislation, regulation, and reimbursement issues at state and national levels

1. Monitor the legislative activity of individual states for PA related issues
   a. Sojourner's Law identify database, update, and lobby
2. Update membership on known changes in 3rd party payers

E. Identify and provide resource people, and materials to accurately share practice information and address areas of concern related to the SIG domain

1. Database of Practicing Performing Arts PT's across the field (11)
   a. Provide Content Experts for development of member resources
   b. Provide Content Experts for journal and abstract reviews
   c. Provide Content Experts for APTA and journalists
   d. Provide Content Experts for PA related Research
   e. Educational Opportunities for Students, Residencies, and Fellowships
2. Create and Maintain Materials in Performing Arts Related Areas (17)
   a. Field Terminology
   b. Epidemiology of Injuries and Screenings
   c. Evaluative, Treatment, and Outcome PA Specific Measures (2)

F. Foster credible research within the SIG domain in conjunction with the Section Research Committee to promote both scientif c foundation and interdisciplinary study within the SIG domain

1. Interpretation and dissemination of Research related material in PA (7)
   a. Provide annotated bibliographies/compendium on topic areas related to PA
   b. Provide information to membership on PA related presentations at CSM/Annual
2. Contribute to Performing Arts related Research Endeavors (11)
   a. Contribute to the Research endeavors of the Section (task force and content expertise)
   b. Content expert advisor /co-investigator of PA related research activities (from database) (1)
   c. Scholarship funding for CSM presentations (Student and Clinician?)
   d. Provide assistance in writing and editorial review for PA related research

SUGGESTIONS from Business Meeting for PASIG Web site vision:

1. Bracing and splinting regulations for competitions
2. Functional measurement tools for Performing Artists
3. Collaboration with other PA organizations (outreach, liaisons)
4. Under gymnastics differentiate between mens, womens, rhytmic, acrobats, trampoline, and tumbling

SPECIAL INTEREST GROUP

PRESIDENT'S MESSAGE

John E. Garzione, PT, DPT, DAAPM

This year's CSM had the most attendees with many of the educational sessions filled to maximum capacity. Every year, I am amazed how the Orthopedic Section staff and Educational Chairperson can put together this logistical challenge to make the conference flow so smoothly. This year was no exception even with the increased numbers of people attending.

The PMSIG's program entitled "Fear Avoidance Behavior: State of the Art Review" presented by James Thomas, PhD; Christopher France, PhD; and Steven George, PhD was well attended and extremely interesting. I thank the presenters for their work and their informative presentation.

Please take 5 minutes of your time to complete and send back the practice analysis questionnaire so we can start compiling the data to develop content areas that should be included in the education of the pain management physical therapist. The results will be published in a future issue of OP.

Physical therapists are now being called upon, by our medical colleagues, to evaluate and treat more difficult conditions than ever before. Recently, I was sent a 50-year-old male who reported a mixture of nonlocalized pain sensations with the most common description being burning on the left side of his body. He had a difficult time describing the nature and location of his pain which brought back memories of the old axiom among neuropsychologists that human thought can take place only with words. Since newborns have no words, they were thought to have no thoughts. In my experience, many physicians thought that if a patient had no words to describe their abnormal pain sensations, it didn't exist. These are usually the patients who will go into great lengths to try to describe their symptoms with little success. Since pain is an impolite and boring topic to others, these people are impolitely pushed aside or sent to physical therapy with the idea that exercise will take their mind off their symptoms.

My patient had a past medical history of Lymphatic Cancer which was treated with various chemotherapeutic agents. One year, after his original cancer diagnosis, he developed left sided pain which started as allodynia in the left groin, burning sensations to the left arm, Thoraco-Lumbar area including the abdomen, and down the left leg. When questioned closely, which took the better part of 30 minutes, he admitted to many triggers including cold, sitting, movement, stress, and touch. He was dismissed by 2 neurologists previously as being "crazy" and instructed to seek psychiatric help. His range of motion of the spine and extremities were normal actively, and his strength was within functional range even though movement increased his pain complaints. He remained working as a bus driver which also increased his symptoms especially in the winter. Since his symptoms did not add up to the standard neurological pain pattern, I could understand the previous neurologist's conclusion. With that said, I concluded that he was suffering from Central Pain Syndrome or Thalamic pain which has been described as "the worst pain known to man."

The various components of Central Pain Syndrome (CPS) are: Muscle pain, Dyesthesia, Hyperpathia, Allodynia, Shooting pain, Circulatory pain that mimics circulatory insufficiency, and Peristaltic pain in the visceral organs. (The mnemonic for remembering this is: "MD has CP."[1] CPS is a neurological condition caused by damage to the central nervous system by either stroke, MS, reactions to medications, tumors, Parkinson's Disease, brain or spinal cord injury.[2]

Currently, the theory is that there is a template in our brains that defines normal sensory input. This template requires the various pain tracts including the posterior columns, the spinothalamic tract, etc. be balanced. When imbalance occurs there is discordance between the normal template and the incoming signals so a pain message is generated. After the brain detects indistinct or confusing pain signals, it recruits additional brain matter to try to sort out the situation. This recruitment (called the NMDA system) becomes so powerful that it can kill brain cells. To avoid cell death, a separate inhibitory system (called the GABA system) begins to shut down blood flow to various brain parts as seen on PET scan. This conflict between the 2 systems is probably central pain. The pain doesn't make sense, but it exists. This theory, provides an idea of how a person without sensation, such as a quadriplegic, can experience pain. The pain isn't in the person's head, but it is in their brain.

I consulted with the referring physician who agreed to put the patient on a tricyclic antidepressant and an anticonvulsant. I treated the patient with transcranial microcurrent and stress reduction techniques for a total of 16 treatments. His pain levels decreased from an 8/10 to 4/10 overall. He still had the same pain triggers, but his pain levels were much less.

I do love it when a plan comes together.

REFERENCES

1. Pain Online. Available at: http:// www.painonline.org/mnem.htm. Accessed February 26, 2009.
2. Pain Foundation. Available at: http:// www.painfoundation.org. Accessed February 26, 2009.

PAIN SIG MEETING MINUTES CSM 2009 LAS VEGAS, NV

Wednesday February 12, 2009

The meeting was called to order at 7:05 AM by John Garzione, President.

Last year's minutes were approved with a slight change to the Addendum which should have read "EIGs would only be involved with educational programs at CSM."

All attendees were thanked for their involvement with SIG activities over the past year. We can still use more articles for the OP newsletter. These articles can be submitted via email to: johngarzione@frontiernet.net for submission.

Terri Delaune attended the interdisciplinary conference coordinated by the Orthopedic Research Center in Fort Worth, TX last

year. Future pain meeting announcements and educational opportunities can also be emailed to johngarzione@frontiernet.net for inclusion in the quarterly email blast to our members.

The practice analysis questionnaire has been completed and will be sent to all SIG members for their response after CSM. This is the first step to develop content areas for the curriculum and guidelines for residency and/or fellowship programs.

The Orthopedic Section and Pain Management SIG Web site will be updated in March. Discussion was held about possible inclusions for our webpage. Some suggestions included having links to other pain treatment interest sites and links to previous email blasts.

People interested in presenting an educational program at next year's CSM can email their proposal to "SCHOLAR" on the APTA Web site for consideration. The deadline is April 10, 2009. The consensus of the business meeting attendees is that they strongly support a program on "barriers to healing" and pelvic pain masked as low back pain. Ideas for specific titles and speakers can be emailed to Marie Hoeger Bement at mariehoeger.bement@Marquette.edu before the April deadline.

The meeting was adjourned at 7:40 AM.

Respectfully submitted,
John E. Garzione, President

animalrehabilitation

SPECIAL INTEREST GROUP

CSM 2009 – Las Vegas, NV
Thursday, February 12, 2009

I. Call to Order - Meeting began 7:05am

II. Welcome

PRACTICE ANALYSIS SURVEY CHALLENGE!!! Amie mentioned that our survey results are low and challenged the membership to fill out a pre-printed survey and return it to us by the end of meeting.

III. Introduction of 2009 Officers & Committee Chairs

a. Amie Lamoreaux Hesbach – President
b. Carrie Adamson Adrian – Vice-President
c. Linda McGonagle – Treasurer/Secretary
d. Donna Redman-Bentley – Research Committee Chairperson
e. Charles Evans – Practice Committee Chairperson/State Liaison Coordinator
f. Cheryl Riegger-Krugh – Nominating Committee Chairperson
g. Amy Kramer – Nominating Committee Member
h. Ellen Hamilton – Orthopaedic Section (OS) Liaison/ APT-SIG Advisor
i. Former SIG Officers: David Levine
j. Guests: Narelle Stubbs

IV. Old Business

a. Approval of CSM 2008 APT-SIG Business Meeting Minutes
   i. MOTION – minutes were approved by membership
b. President's Report
   i. Strategic Plan 2006-2009 – We are planning to survey the membership so to revise/update our Strategic Plan.
   ii. Practice Analysis – Tara initially thought we had ~80 responses until further analysis revealed that only ~27 responses were returned. A challenge was issued to the membership to complete pre-printed versions that were handed out on the spot or to access the practice analysis online and be eligible to win an animal ISC. The purpose of the practice analysis was reiterated and emphasized repeatedly throughout the meeting.
   iii. Communication/Public Relations – We continue to utilize the newsletter, blast emails, the listserve, and the Web site for communication with our members. We would like to get a volunteer to assist with public relations and coordinate efforts with the Orthopaedic Section. Lisa Bedenbaugh has volunteered to coordinate our newsletter in OPTP. She will be recruiting submissions in the near future.
   iv. Political Liaison Update

1. The American Association of Rehabilitation Veterinarians (AARV) was introduced and Amie brought forth several concerns related to two letters that were sent by the AARV to individual state Veterinary Medical Associations and Veterinary Schools: 1.) inaccurate description of legislation in CO; 2.) intent of veterinarians to allow physical therapists and veterinary technicians to be involved in treating animals, but under the direct supervision of a vet only (essentially equating the professions of physical therapy and veterinary technology).
   a. Amie placed a phone call to Julia Tomlinson, DVM – President of the AARV to discuss these concerns. Dr. Tomlinson insisted that an open collaboration is still their intent, however refused to retract their letter to the veterinary medical associations or correct their inaccuracies, stating that these letters were never meant to be viewed by a physical therapist. A board meeting will be held on Monday by the AARV, concerns will be voiced and a position statement by the AARV will be shared with the Animal SIG liaison, Amie Hesbach.
2. International Association of Veterinary Rehabilitation & Physical Therapy (IAVRPT) – established at the 5th International Symposium on veterinary rehabilitation and physical therapy in 8/08. Their website is a work in progress, but you may join online for a cost of $50. Information will continue to be updated on the web. The next international Symposium will be in August 2010 in Auburn, Alabama.
3. American College of Veterinary Sports Medicine & Rehabilitation (DACVSMR) – Diplomate status for a boarded specialty in animal sports medicine and rehabilitation has been accepted by the American Veterinary Medical Association. This specialty certification is for veterinarians only and may be equated with a similar role as a human physiatrist.
4. WCPT – 10 countries have recognized animal physical therapy groups. There are four other countries who are interested, but not yet recognized. Steve Strunk is spearheading the WCPT effort and application will be made at the 2010 meeting.

c. Vice-President/Education Committee Report
   i. Educational Opportunities – Independent study courses are available online and topics for future ISCs are welcome and ideas can be directed to the board. Discussions with the OS and Occupational Health and Performing Arts SIG will begin to better define a model for membership to pursue specialized education within their respective fields, potentially focusing on residencies and fellowships.
   ii. CSM 2010 Programming Ideas – a few ideas have been mentioned for 2010 programming including:

1. State Liaison Forum/Roundtable
2. Animal Rehabilitation Case Review
3. Stifle Focus (Jennifer Brooks)
4. Sports Medicine (Dr. Rob Gillette)

   iii. Clipboards – the canine clipboard is finished and sells for $25 +$7 shipping. Jennifer Brooks has offered to put together an equine version in the near future.
   iv. FAQ/State Liaison Resources – legislative resources will be submitted to Tara and upon approval from the OS board, will be available online as a membership benefit. Resources may include the scope of practice for those pursuing legislative efforts in their respective states, CE lectures, educational handouts for clients, and frequent-

ly asked questions for those interested in getting started in this field.

v. Other Education Issues

1. Resources for ACCE's – Cheryl Riegger-Krugh will put together a resource manual for ACCEE2s and for PT students who are interested in a career in animal rehabilitation.
2. Task Force for the Definition of Standards of Education for Non-Physical Therapists – Cheryl will also head this Task Force.

d. Treasurer/Secretary Report – The SIG budget is maintained/controlled by the Section but we do have access to encumbered funds which will help us with special future projects as well as potential continuing education offerings.

e. Practice/State Liaison Committee Report

i. Lisa Bedenbaugh (Georgia), Beth Williams/Robyn Roth (Nevada), Amie Hesbach (Maryland), Carrie Adrian (Colorado) updated us with regards to legislative happenings in their respective states.

ii. Kirk Peck (Nebraska) was unable to attend but, through Amie Hesbach, gave an update as well.

f. State Government Affairs Forum 2007 (Lisa Bedenbaugh) – A report was posted in the last newsletter.

g. Research Committee Report – No report.

h. Nominating Committee Report – No report.

i. Orthopaedic Section Liaison Report – No report.

V. New Business.

a. APTA Residency/Fellowship Credentialing Committee – We will continue conversations with the Orthopaedic Section and other SIGs. There is a preconference course at APTA 2009 in Baltimore which we hope a member of our board might attend.

b. Call for Nominations & Committee Chairs/Members – We need volunteers to assist us with special projects and to serve on committees.

c. Veterinary Insurance Reimbursement Issues – We would like to have a volunteer to further investigate this.

d. Other New Business

VI. Open Forum

a. Robyn Roth suggested that programming next year focus on neurology/neurorehabilitation.

VII. Adjournment

VIII. Following the educational session, Jennifer Brooks presented information regarding the new legislation in New Hampshire. This bill calls for a separate designation of physical therapists that practice on animals, with appropriate additional training, that will be referred to as 'animal physical therapists'.

CASE STUDY: PHYSICAL REHABILITATION OF A SHETLAND SHEEPDOG S/P SURGICAL REPAIR OF A CHRONIC GASTROCNEMIUS RUPTURE—PART II

Amie Lamoreaux Hesbach, MSPT, CCRP, CCRT

ACTUAL HISTORY OF TREATMENT

Physical rehabilitation treatment included orthotic prescription, passive and active therapeutic exercise, including aquatic therapy, neuromuscular electrical stimulation, manual therapeutic techniques, and home exercise program prescription and progression.

Treatment was progressed in 3 phases. Phase I was the protective phase, during which an orthotic was applied during rehabilitation treatment and during all activities at home. Phase II was the progressive phase, during which the rehabilitation activities were progressed to activity without the orthotic, while the orthotic was used for all activities at home. And, finally, Phase III was the challenge phase, during which all activities, including those at home, were performed without the orthotic. Unfortunately, we did not achieve this Phase III goal.

Following failure of the soft bandage to support Tucker in a non-plantigrade position, an Orthovet splint was ordered. Prior to delivery of the splint, the fiberglass bivalve cast was again applied. On POD 62, the Orthovet splint was applied. At the same treatment, the clients were instructed in application and use of the splint, including precautions. Unfortunately, on POD 69, during rehabilitation treatment, Tucker's splint fractured at the hock joint. Orthovet was contacted and a "heavy duty" splint was ordered. Once again, the fiberglass bivalve cast was applied. On POD 76, this "heavy duty" splint was delivered and applied. More recently, though it is beyond the scope of this case study, the surgeon, clients, and therapist coordinated with a certified prosthetist and orthotist who will fabricate a custom splint for Tucker for long-term use.

Passive range of motion movements were applied to Tucker's hip, stifle, hock, and metatarsal-phalangeal (MTP) joints on POD 57, 62, and 69. In subsequent treatments, passive range of motion was applied only to the MTP joint as range of motion of the other hind limb joints was within normal limits.

Active therapeutic exercises focused on progression of strengthening activities from splint-supported (Phase I), to therapist-supported (Phase II), and to anti-gravity activities (Phases II and III). Towel-supported standing and walking was performed without support of the splint and was progressed from POD 57 to POD 76. Towel-support was used to allow for weight bearing without a "collapsed" plantigrade position of the left hock. Rhythmic stabilization in standing, was incorporated into treatment to promote proprioception, balance, and weight shifting, and was performed with the splint (POD 64) and without the splint (POD 83). Promotion of hind limb weight bearing was accomplished with standing pelvic approximations with the splint (POD 69) and without the splint (POD 83). Weight shifting both on land and with fore limbs supported on a 55 centimeter therapy ball was performed with the splint (POD 69) and without the splint (POD 78). Active range of motion activities also included sit to stand with the splint (POD 76) and without the splint (POD 92). Active stifle flexion and hock dorsiflexion was promoted with the proprioceptive placing reaction (POD 76) and step-over activities (POD 90). Three-legged standing was also initiated for further progression of strengthening and weight bearing tolerance on POD 78.

Aquatic therapy, including swimming and walking in the Westcoast Water Walker underwater treadmill, was progressed during each subsequent treatment (Table 5). Walking with unweighting due to the buoyancy of the water was initially attempted during treatments on POD 57, 62, and 64. Unfortunately, Tucker tended to walk into a plantigrade hock position without additional external support. Once the Orthovet splint was delivered, walking was attempted in the underwater

Table 5. Aquatic Therapy Progression

POD	Water level (cm)	Actual speed (MPH)	Duration (min)	Walk or swim	Splint?
57	39	0.90	4	Walk	N
62	30	0.90	5	Walk	N
64	31	0.90	6	Walk	N
69	27	0.76	2	Walk	Y
69	27	0.76	2	Walk	N
69	42	NA	3	Swim	N
71	45	NA	6	Swim	N
76	30	0.76	5	Walk	Y
76	45	NA	5	Swim	N
78	30	1.10	6	Walk	N
78	45	NA	5	Swim	N
83	33	1.10	6	Walk	N
83	50	NA	6	Swim	N
85	33	1.10	8	Walk	Y
85	50	NA	5	Swim	N
90	60	NA	8	Swim	N
90	39	0.90	8	Walk	N
92	60	NA	9	Swim	N
92	37	0.76	5	Walk	N
99	55	NA	10	Swim	N
99	40	0.76	5	Walk	N
104	34	1.31	10	Walk	N
111	60	NA	10	Swim	N
111	34	0.90	7	Walk	N
115	38	0.76	10	Walk	N
115	60	NA	10	Swim	N
120	33	0.90	15	Walk	N

treadmill with the splint on for additional support. On POD 69, swimming was initiated for full active range of motion of all hind limb motions. Swimming was progressed to promote further strengthening of the gastrocnemius muscle without the application of stress to the repair.

Additionally, Tucker was able to swim for extended periods of time, thereby offering an aerobic activity which might effectively maintain or decrease Tucker's weight as his "land" exercise was severely limited by his antigravity strength, specifically, with increased duration of underwater treadmill walking sessions, there was an increased likelihood that Tucker would "collapse" into a plantigrade position of his left hock. Underwater treadmill walking was progressed by gradually lowering the water level to allow for increased weight bearing through the left hind limb. Duration of treatment was limited by the observed hock position during treatment.

Neuromuscular electrical stimulation (NMES) was applied to Tucker's left gastrocnemius muscle to combat the significant muscle atrophy due to Tucker's prolonged immobilization and disuse due to rupture. NMES was initiated on POD 62 and continued twice weekly until POD 99. Twenty to 30 repetitions were performed at a frequency of 30Hz, an on: off ratio of 10:10, and a 3-second ramp time. NMES was discontinued in favor of active exercises on POD 64.

Manual therapeutic techniques were also incorporated into Tucker's physical rehabilitation treatment. Joint mobilizations (Maitland Grade III-IV) were performed to Tucker's left metatarsal-phalangeal (MTP) and interphalangeal (IP) joints (in cranio-caudal and caudo-cranial directions) prior to and during passive range of motion treatment. Mobilizations were initiated on POD 62 and discontinued at discharge. These mobilizations were selected due to the severe limitation with MTP and IP flexion and extension passive range of motion due to prolonged immobilization in the splint (and likely deep digital extensor tendon contracture).

A home exercise program was instructed initially at the initial evaluation (POD 58) and included passive range of motion of the hip, stifle, hock, and metatarsal-phalangeal joints and towel walking. On POD 62, the clients were instructed in the application and care of the Orthovet splint. On POD 120, the clients were instructed to leash walk Tucker while wearing the splint twice daily, initially at a duration of 5 minutes and gradually increasing as tolerated. Additionally, interphalangeal and metatarsal-phalangeal passive range of motion was instructed to the clients. These exercises were to be performed at least three times daily during "skin checks" while the splint was removed.

PHYSICAL REHABILITATION RE-EVALUATION

Formal re-evaluations were performed on POD 90 and POD 120. These objective findings, which include thigh girth, passive range of motion, weight, and lameness scores, are noted in the tables below (Tables 6, 7, 8, 9, 10).

Table 6. Taylor Lameness Scores on Re-Evaluation

POD	Stance	Walk	Trot
57	3	2	Not tested
90	2	2	Not tested
120	0	2	Not tested

Table 7. Base of Support Scores on Re-Evaluation (Cm)

POD	Fore limb	Hind limb	Difference
57	15	15	0
90	15	25	10
120	18	28	10

Table 8. Thigh and Calf Girth Measurements on Re-Evaluation (Cm)

POD	Right thigh	Left thigh	Difference	Right calf	Left calf	Difference
57	22.8	20.7	2.1	9.2	8.8	0.4
90	23.5	23.5	0.0	9.7	10.5	0.7
120	23.5	22.0	1.5	10.8	10.0	0.8

Table 9. Range of Motion Measurements on Re-Evaluation (Degrees)

	Right	Left POD 57	Left POD 90	Left POD 120	Normal
MTP flexion	65	30	80	80	
MTP extension	25	10	0	20	
Hock flexion with stifle flexion	105	105	95	100	
Hock flexion with stifle extension	30	40	40	40	39
Hock extension	105	110	150	160	164
Stifle flexion	50	40	43	35	42
Stifle extension	155	165	160	160	162

Table 10. Weight on Re-Evaluation (Pounds)

POD	Weight
57	46.0
90	42.1
120	44.3

During the re-evaluation on POD 90, Tucker demonstrated independence with all functional mobility and transitions while wearing the orthosis. Functional mobility, transitions, and postures were asymmetrical, however, with partial weight bearing, hip abduction, and stifle extension of the left hind limb due to Tucker's need to weight shift away from the left to allow for adequate space for the bulky orthosis.

At a walk without the orthotic, Tucker tended to collapse partially into a plantigrade position with an abnormal amount of hock flexion on the left hind limb on weight bearing. However, with static standing, Tucker was able to hold both calcanei level.

Based on the POD 90 re-evaluation, Tucker's progress towards goals was assessed.

1. Tucker will have passive range of motion of the left metatarsal-phalangeal joint equal to the right within 5° in 4 weeks. This goal was not met at re-evaluation on POD 90; however, total range of motion of the left MTP joint had increased significantly, even though MTP extension effectively decreased.
2. Tucker will demonstrate a symmetrical standing posture with even calcaneal heights without external splinting in 4 weeks. This goal was met at re-evaluation on POD 90.
3. Tucker will demonstrate a lameness score of 1, slight lameness, in 4 weeks. This goal was not met.

During the re-evaluation on POD 120, Tucker demonstrated continued independence and asymmetry with all functional mobility, postures, and transitions, as in the previous re-evaluation. At a walk without the orthotic, Tucker tended to collapse partially into a plantigrade position after approximately 6 steps with an abnormal amount of hock flexion on the left hind limb on weight bearing. However, with static standing, Tucker was able to hold both calcanei level.

Based on the POD 120 re-evaluation, Tucker's progress towards goals was assessed.

1. Tucker will have passive range of motion of the left metatarsal phalangeal joint equal to the right within 5° in 4 weeks. This goal was met at re-evaluation on POD 120. Left MTP flexion range of motion even exceeded that of the right MTP joint.
2. Tucker will demonstrate a lameness score of 1, slight lameness, in 4 weeks. This goal was not met at re-evaluation on POD 120.

Though this case report ceases recording of Tucker's rehabilitation treatment following POD 120 (due to Canine VI deadlines), rehabilitation treatment continued for approximately 3 weeks. Unfortunately, approximately 2 weeks prior to planned discharge from rehabilitation, Tucker hopped from the passenger's to the driver's seat in the family vehicle on the way to a rehabilitation appointment while the client was changing a flat tire. Evidently, the straps on Tucker's orthotic were loose and Tucker's left hind limb slipped out of the splint. On an informal re-evaluation later that day, the therapist and veterinary surgeon noted a gapping in the Achilles' tendon and palpable sutures. Additionally, Tucker was unable to hold level calcanei without a plantigrade position of the hock in either static standing or at a walk. Conclusion was made by the surgeon that one or more of Tucker's sutures had ruptured.

As the clients (and Tucker) had been through nearly a year of surgery, recovery, and rehabilitation, a decision was made to fit Tucker with a custom orthotic for long-term use rather than undergo any further surgical procedures (likely a joint fusion) or rehabilitation. A certified orthotist and prosthetist was contacted to fabricate this device. Additionally, the clients intend to leash walk Tucker while wearing his orthotic and to commence swimming in the backyard pool as soon as possible.

DISCUSSION

Though, after 16 treatments, the long-term goal of Tucker's rehabilitation (specifically, to walk without the orthotic) was not met, this case served as an educational experience for the veterinary surgeon and physical rehabilitation therapist involved.

Theorized reasons for the failure of Tucker's rehabilitation include:

An alternate surgical procedure should have been used following failure of the first "loop and lock" procedure.

Immobilization should have been of a shorter duration. A proposed time line might include bivalve cast immobilization for 3 weeks followed by splint immobilization for 3 weeks and gradual discontinuance of the splint following. Healing is not expected unless there is weight bearing forces to stimulate that healing process.

Swimming and strict diet modification should have been used to reduce Tucker's weight preoperatively.

It is also theorized that Tucker, like other Shetland sheepdogs, might have a collagen disorder in which he is unable to heal connective tissues with strong collagenous tissue.

Regardless of the eventual failure of this rehabilitation case, successes did occur. Improvements were made in lameness reduction, metatarsal-phalangeal range of motion, and weight reduction. As well, MASH has now affiliated itself with a certified orthotist and prosthetist whose skills should benefit future patients.

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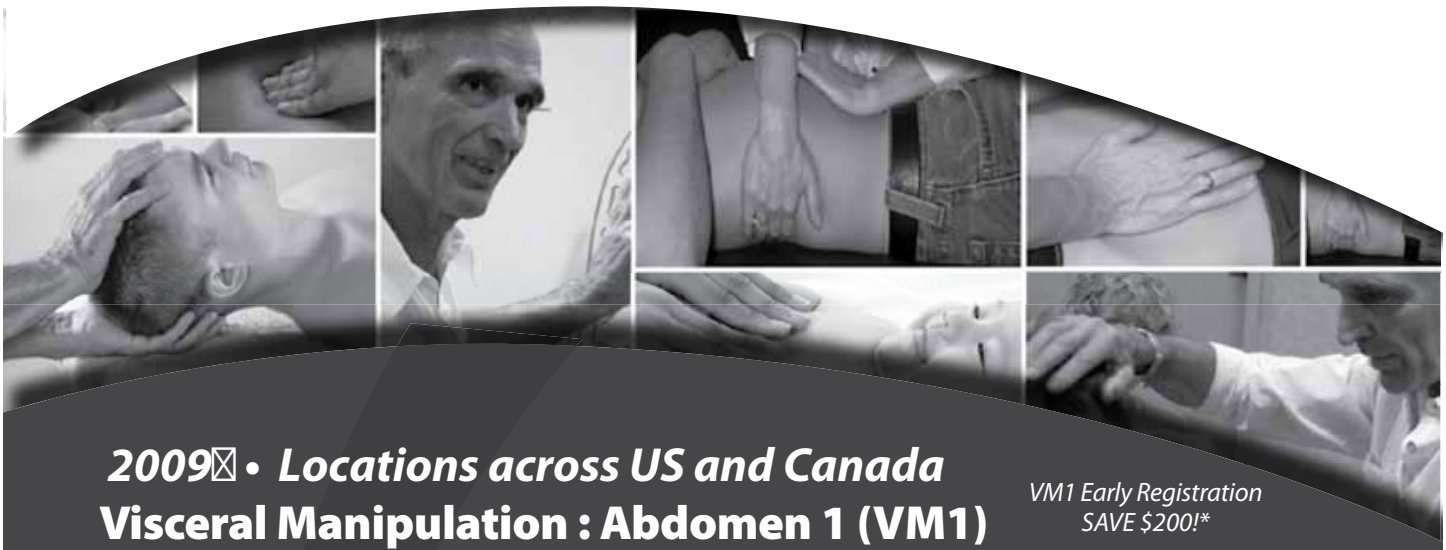

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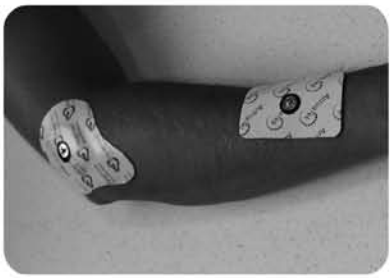

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